PLANNING COMMISSION
TUESDAY AUGUST 10, 2021
Sycamore Room – 1st Floor
201 West Ash Street Mason, MI
6:30 P.M.

AGENDA

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **PUBLIC COMMENT**
4. **APPROVAL OF MINUTES**
   A. Approval of Minutes from Regular Planning Commission Meeting on June 15, 2021.
5. **PUBLIC HEARING**
   A. Alan Boyer, LSG Engineers & Surveyors, on behalf of Gestamp Mason, LLC, has requested approval of a Final Site Plan for construction of a new 49,200 sq. ft. addition on an existing 624,780 sq. ft. building to be used as a Finish Goods Product Storage (Low Bay) and to perform other related site improvements on property located at 200 E. Kipp Rd, parcel 33-19-10-16-100-024. The parcel is zoned M-2 General Manufacturing District.
6. **UNFINISHED BUSINESS**
   A. Master Plan Update - https://www.mason.mi.us/master_plan/index.php
7. **NEW BUSINES**
   A. Discussion: Ordinance text amendments regarding attached garages and front yard parking
   B. Discussion: Youth Advisor Role
8. **LIAISON REPORT**
   A. City Council Report
   B. City Manager Report
9. **ADJOURN**

CITY OF MASON
PLANNING COMMISSION MEETING
MINUTES OF JUNE 15, 2021
DRAFT

Sabbadin called the meeting to order at 6:31 p.m. in person at Mason City Hall.

Roll Call		Present	Absent	Notes
Commissioner	Barna		X	With Notice, anticipated being at meeting, but arrived after mtg adjourned.
Council Liaison	Clark	X		
Vice-Chair	Howe		X	With Notice
Commissioner	Husby	X		
Commissioner	Perrault	X		
Chair	Sabbadin	X		
Commissioner	Waxman	X		
Secretary	Wren	X		
Commissioner	Vacant (Shattuck)			

Also present: Elizabeth A. Hude, AICP, Community Development Director, Thomas De la Fuente, PC Youth Advisor

PUBLIC COMMENT
None.

APPROVAL OF MINUTES
MOTION by Waxman, second by Husby, to approve the Planning Commission meeting minutes from May 11, 2021.

Yes (6) Clark, Husby, Perrault, Sabbadin, Waxman, Wren
No (0)
Absent (2) Barna, Howe

MOTION PASSED

UNFINISHED BUSINESS
A. Master Plan Update

Director Hude encouraged everyone to sign up for the email updates. Waxman informed everyone that the selection committee (Deb Stuart, Mike Olson, Leon Clark, Seth Waxman, and Director Hude) met and reviewed the proposals and have narrowed it down to four (4) potential contractors. They are in the process of finalizing those decisions, they have sent questions to contractors and are awaiting the answers. It is anticipated that they will meet one more time to finalize the decision. Waxman commented

that overall, the presentations that were received were very good; that this was a tough decision. Many conversations will need to be had to allow us to make the best recommendation for the city. Clark commented about the interview process and indicated that some presentations were good, and some were not.

NEW BUSINESS

A. Scott Shattuck resignation from Planning Commission

Chair Sabbadin shared that a letter had been received from Scott Shattuck announcing his resignation. The board will be seeking new applications to fill the position.

B. Future Zoning Text Amendments

Director Hude shared that in the Master Plan RFP a major focus is to update the zoning ordinances, both the text, and the zoning map. The process is based on a lot of analysis and community conversations. There are a few items that need to be cleaned up. One of those is that there is some case law that municipalities do not need zoning permits for their own projects. We want to make sure that our zoning texts reflects that as it will pertain to some of the City capital projects that are coming up and we want to be prepared for what the Planning Commission role will be with those. Hude mentioned that she has been working with residential developers and having discussions about the interpretation of the homes with garages that project into the front yard, that will also be brought forth to the Commission for some feedback. Hude is seeking input from developers because these changes will affect them in the long run. There have been several conversations about subdivisions and that is part of the RFP to go through, update and make changes to some of those ordinances. Staff is working with Mason Community Services to determine the necessary ordinance amendments and permits that may be required for use of the Nazarene Church. Hude is working on some text amendments to give them a variety of options. In addition, because of Covid, many residents are looking for ways to invest in their homes. There have been several requests for decks. Because of the setbacks they are limited, so we are looking at a text amendment that would allow projections into a setback. We are trying to have some flexibility and options for those residences wanting to invest in their homes. Hude informed Commissioners that the items regarding public projects could be presented in July and August.

LIAISON REPORT

A. Council Liaison Report

Council Liaison Clark reported that at the last City Council meeting; correspondence from a resident was received requesting a dog park in town. City Council approved the fire service agreement with the Township of Aurelius for 2021-2024. There was discussion and approval for the purchase of a Police Vehicle (Hybrid). There was a discussion and passing of resolution 2021-12 which was for an increase to the City of Mason utility rates. Council had second reading and Adoption of Ordinance 235, Amending Chapter 2 – Administration - Article VI. Boards and Commissions - Division 1 - Generally and Division 7 – Local Development Finance Authority. Council had the first Reading of Ordinance 236 to Amend Chapter 78 – Traffic and Vehicles – Article I – In General – Section 78-7 – Skateboards. This came from a resident that wanted to be able to skateboard in the cemetery. The ordinance was amended to allow skateboarding in the cemetery on the property that is dedicated to the Hayhoe River Walk. Additional discussions by Council included Parks and Recreation plan, some sidewalk gaps that exist in Franklin Farms and how those gaps can be filled. Lastly, there was discussion regarding Implicit Bias training for City Council.

B. City Manager Report

Chair Sabbadin reported that the City Manager link in the report was broken. Director Hude said she will check into that and provided direction to where the report could be found in the future. Council Liaison Clark reviewed the report with commissioners.

Meeting was adjourned at 6:45 p.m.

_____

Megan Wren, Secretary

City of Mason
Planning Commission
Staff Report

TO: Planning Commission

FROM: Elizabeth A. Hude, AICP, Community Development Director

SUBJECT: 200 E. Kipp - Gestamp

DATE: August 5, 2021 - FINAL

Alan Boyer, LSG Engineers & Surveyors, on behalf of Gestamp Mason, LLC has submitted a request for approval of a Special Use Permit and Final Site Plan for construction of a new 49,200 sq. ft. addition on an existing 624,780 sq. ft. building to be used as a Finish Goods Product Storage (Low Bay) and to perform other related site improvements on property located at 200 E. Kipp Rd, parcel 33-19-10-16-100-024. The parcel is zoned M-2 General Manufacturing District.

The proposal is shown on the following plans and documents submitted on July 6, 2021:

- Letter from Alan D. Boyer dated July 2, 2021
- Complete Permit Application
- Stormwater Management Plan (includes EGLE permit application), prepared by LSG Engineers & Surveyors, dated July 2, 2021
- Geotechnical Exploration and Engineering Report, prepared by Intertek PSI, dated August 22, 2019
- Site Plan, prepared by LSG Engineers & Surveyors, dated July 2, 2021:
    - Cover, Sheet C
    - As Built Site Survey – Existing Conditions, Sheet C1.0
    - Topographic Survey, Sheet C1.1
    - Overall Site Plan and Existing Conditions, Sheet C2.0
    - Detailed Demolition Plan, Sheet C2.1
    - Detailed Site Plan, Sheet C3.0
    - Detailed Grading Plan, Sheet C4.0
    - Detailed Utility Plan, Sheet C5.0
    - Fire Main Plan and Profile, Sheet C5.1
    - Storm Drainage Plan and Profile, Sheet C5.2
    - Miscellaneous Details, Sheet C6.0
    - Fire Main Details, Sheet C6.1
    - Storm Drainage Details, Sheet C6.2
    - Soil Erosion Control Plan, Sheet C7.0
    - Soil Erosion Control Details, Sheet C7.1
    - Soil Erosion Control Notes, Sheet C7.2
    - Landscape Plan, Sheet L1.0

- Architectural Drawings containing elevation and floor plans, prepared by William A. Kibbe & Associates, Inc., dated June 25, 2021
    - Title Sheet, Sheet TS
    - Composite Life Safety Plan, Sheet A2.0
    - Addition Floor Plan and Details, Sheet A2.1
    - Building Elevations and Sections, Sheet A4.0

The following supplemental materials were submitted:

- Employee Traffic Data, received July 14, 2021
- Applicant letter received/dated August 4, 2021 with responses to previous draft of staff report and Traffic Data for truck deliveries

The applicant paid a fee of $375, and together with the plans and documents listed above, the application appears to satisfy the submittal requirements of Sec. 94-225(b) and 94-226(a).

PUBLIC NOTICE

Notice was given as required in Sec. 94-101 which requires notices to be published in a newspaper of general circulation, and to be mailed to owners and occupants within 300 feet of the boundary of the subject property. The public hearing notice was posted at City Hall and published in the Ingham County Community News Legal Section on Sunday, July 25, 2021; notices were mailed to owners and occupants on July 22, 2021.

CONSTRUCTION SCHEDULE

In the submission letter dated July 2, 2021, it states Gestamp Mason, LLC, plans to begin construction immediately upon approval and permitting. Building occupancy is desired in Spring of 2022 or sooner. The construction will happen in two phases. Phase 1 will be the road installation and Phase 2 will be the construction of the new 49,200 sq. ft. building addition.

SITE HISTORY

The facility was first constructed in 1997 beginning at 241,444 sq. ft. Expansions occurred in 2007, 2011, 2016 resulting in the current total square footage of 624,780 sq. ft. With the proposed expansion, the facility will reach 673,980 total sq. ft.

LAND USE/ZONING/MASTER PLAN

The site is bordered by Kipp Road to the north, Hull Road to the west, and Trillium Drive to the south. The Jackson & Lansing Railroad borders the property to the east. Approximately 850 feet of the Sycamore Creek crosses the northeast corner of the property. A portion of the 100-year floodplain is located in northeast corner of the site. Kipp and Hull rights of way are under the jurisdiction of the Ingham County Road Department. The parcel is zoned M-2 General Manufacturing District.

This is a material change to a previously approved site plan and therefore subject to Planning Commission review per Sec. 94-228. A Special Use Permit is required only in accordance with Sec. 94-152(d)(1) Above ground storage of flammable liquids or combustible materials. There are above ground propane storage tanks being relocated on the site. The current and proposed uses are allowed by right under Sec. 94-152(b)(12)f. Industrial manufacturing, processing, or assembling of transportation equipment, such as motor vehicles and non-motorized vehicles and parts. A prior draft of the staff report suggested a SUP may not be required and has since been confirmed as stated here.

The surrounding land uses and zoning are as follows:

	Current Land Use	Zoning	Future Land Use
North	Commercial and Undeveloped	C-2 (General Commercial) M-1 (Light Manufacturing)	Mixed Use
East	Jackson and Lansing Railroad Vevay Township	Vevay Township	Vevay Township
South	Industrial and Undeveloped	M-2 (Light Manufacturing)	Industrial
West	Commercial, Residential and Vacant Residential	C-2 (General Commercial) AG (Single Family Agricultural)	Commercial

The Master Plan Goal and Objectives that are most relevant include:

Community Character, Historic Preservation and the Environment ***on p. 2-3:***
GOAL: Preserve the quiet, historical, and small-town character of Mason along with the integrity of its environmental resources. Objectives 1) Encourage land development designed in scale with existing developed areas and the dominant character of the City, through reasonable standards addressing density, building size, height, architectural design, setbacks, signage, opens space, and other development features. (cont.) 9) Maintain and beautify established and new parking areas through appropriate landscaping and screening. 10) Encourage landscaping and screening programs, in association with new commercial and industrial development, to minimize negative impacts on community character. 11) Encourage the preservation of open spaces and natural resources (such as woodlands, wetlands, and stream corridors) as part of the land development process, including the use of clustered housing design.

Industrial Development are stated ***on p. 2-6:***
GOAL: Provide opportunities for the reasonable expansion of industrial development in a manner that is sensitive to the predominant small-town character of the community, minimizes new public service costs, and protects the viability and desirability of residential and commercial areas.
Objectives: 1) Recognize the significance of key corridors such as U.S. 127 and the Jackson and Lansing Railroad as potential opportunities for the location of new industrial development. 2) Emphasize industrial development that is in character and scale with surrounding land uses and the City as a whole, considering such features as building size and height, architectural design, setbacks, signage, lighting, landscaping, and open spaces. 3) Encourage industrial development to be located in targeted areas rather than indiscriminately encroach into residential and commercial areas. 4) Emphasize industrial uses that have comparatively low public services and infrastructure needs. 5) Emphasize industrial uses that minimize negative impacts upon adjacent land uses, taking into consideration such factors as noise, traffic, lighting, fumes and shadow patterns. 6) Encourage industrial uses to locate within well-designed industrial parks, characterized by ample landscaping buffering and interior street systems. 7) Through site plan review proceedings, work to ensure that new industrial uses reflect a visual character that is complementary to the City as a whole. 8) Encourage the redevelopment and upgrading of deteriorating and unsightly industrial properties.

COMMENTS – DEPARTMENTS AND AGENCIES

Staff circulated the application and plans to city staff and agencies with jurisdiction over the project. The following comments were received.

Engineer	See attached email.
Fire	[City Engineer email] captures my concerns about access roads and the hydrant connections. Additionally, will there be any hazardous chemicals or products stored in the addition and are they up to date with the Ingham County P-2 reporting?
Police	Add sufficient lighting for safety and security – all entrances and travel/parking areas.
Public Works	See City Engineer comments.
Building	A preliminary review of the applicable code references including area, occupant load, egress requirements, use and occupancy classification, etc all seem to be correct.
Ingham County Drain Commission	SESC Permit application has been submitted and is in review.
Ingham County Road Department	None
Michigan Department of Transportation (MDOT)	None
Michigan Department of Environment, Great Lakes, and Energy (EGLE)	EGLE PERMIT NO. WRP030048 V1.0 was issued on 8/3/2021
Federal Aviation Admnistration (FAA)	Review is pending.

STAFF REVIEW

Staff finds that the Site Plan does not appear to meet the standards for Final Site Plan Approval. This is based upon a review of the materials submitted which remain consistent with the plans. Attached is a letter from the applicant which includes a previous draft of the staff report with responses indicated in red. Staff has revised the sections below based upon those responses.

Section 94-191(f) of the Mason Code provides the Basis of Determination for Special Use Permits.

Before approving a special use permit, the planning commission shall find by clear and convincing proof that the applicable standards set forth by this chapter shall be satisfied by the completion and operation of the proposed development. The planning commission shall review the particular circumstances and facts of each proposed use in terms of these standards and shall make written findings showing that such use shall:

STATUS/NOTE	REQUIREMENT	
M = Appears to meet requirement; D = Does not appear to meet requirement; I = Information Needed; R = Recommendation; W = Waiver Requested; *Italics = Staff comments*		
I	(1)	Be designed, constructed, operated, and maintained so as to be harmonious and appropriate in appearance with the existing or intended character of the general vicinity and that such a use will not change the essential character of adjacent property or the zoning district in which it is proposed.
The location is currently zoned M-2 General Manufacturing District. The zoning and future land use of		

the surrounding properties ranges from manufacturing and commercial to residential as indicated in the zoning table on page 3 of this report. It appears that this criteria will be met related to the placement of the above ground propane storage tanks, however, staff has requested additional information related to the site plan necessary to verify this criteria has been met.		
I	(2)	Not be hazardous or disturbing to uses in the same general vicinity and will be a substantial improvement to property in the immediate vicinity and to the community as a whole.
Staff has requested additional information on the site plan in conjunction with the Fire Chief's comments necessary to determine this criteria has been met.		
M	(3)	Be served adequately by essential facilities and services, such as highways, streets, police and fire protection, drainage structures, refuse disposal, water and sewage facilities, and schools.
The site is currently adequately served by essential facilities and services.		
M	(4)	Not create additional requirements at public cost for public facilities and services.
It does not appear that the above ground propane storage tanks will create additional public costs.		
I	(5)	Not involve uses, activities, processes, materials, and equipment or conditions of operation that will be detrimental to any person, property, or the general welfare by noise, fumes, glare, or odors.
Staff has requested additional information related to the site plan necessary to verify this criteria has been met.		
M	(6)	Not be located such that it will directly or indirectly have a substantial adverse impact on the natural resources of this city.
Staff is not aware of any conditions that would create any substantial adverse impact. The site is already developed.		
M/I	(7)	Be in compliance with other applicable local, county, state, or federal rules and regulations.
The applicant is responsible for pursuing the necessary county, state, or federal approvals and permits related to the installation of the above ground propane storage tanks in addition to this local SUP.		

§94-227. Standards for site plan review and approval. In reviewing an application for site plan review and approval the following standards shall apply:

STATUS/NOTE	**REQUIREMENT**
M = Appears to meet requirement; D = Does not appear to meet requirement; I = Information Needed; R = Recommendation; W = Waiver Requested; *Italics = Staff comments*	
M/I	(1) The site shall be developed so that all elements shall be harmoniously and efficiently organized in relation to the size, shape, type and topography of the site and surrounding property.
The site appears to be harmonious and efficiently organized. The new building addition is appropriately scaled with the remainder of the building and along with the new service lane will improve traffic circulation throughout the site. The changes are integrated with the topography and appear to be harmonious with surrounding properties. See parking and sidewalk discussion below.	
M	(2) The site shall be developed so as not to impede the normal and orderly development, improvement, and use of surrounding property for uses permitted in this chapter.
The new addition and service drive does not appear to impact the uses of surrounding property.	
M/I	(3) All buildings or groups of buildings shall be arranged to permit emergency vehicle access by some practical means to all sites.

The service drive extension will improve emergency vehicle access to the building. See City Engineer email regarding construction staging plan for maintaining emergency vehicle access.	
M	(4) Every structure or dwelling unit shall have direct access to a public street or indirect access to a public street via an approved dedicated private street.
The site has access on a public street to the north (Kipp) and a private street to the south (Trillium).	
M/I	(5) Appropriate measures shall be taken to ensure that the addition or removal of surface waters will not adversely affect neighboring properties, that controls are in place to minimize sedimentation and erosion, and that topographic alterations are minimized to accommodate storm water management.
The site will be subject to requirements of the Ingham County Drain Commission. A revised Storm Water Maintenance Agreement with the City will be required and storm drains must be sealed as stated per the City Engineer's email.	
M/I	(6) Provisions shall be made for the construction of storm sewer facilities including grading, gutters, piping, on-site storage, and treatment of turf as required to handle stormwater and prevent erosion.
Same as previous.	
I	(7) Secondary containment for above ground areas where hazardous substances are stored or used shall be provided as required by the city fire chief.
Above ground propane storage tanks are being relocated and are subject to a Special Use Permit. Additional information regarding hazardous substances is required per the Fire Chief's email.	
I	(8) Exterior lighting shall be designed and located so that the source of illumination is directed away from adjacent properties, the intensity of lighting is the minimum necessary, and the direction of lighting is downward as much as is possible and appropriate for the project.
Although the project narrative indicates that site lighting will be directed downward and not cause an adverse impact on adjacent sites, it does not provide information regarding the location and intensity of lighting. A photometric plan demonstrating that site lighting be consistent with the lighting requirements listed in Section 94-177(e) of the zoning ordinance is required. Existing lights should be evaluated for compliance as well. Staff has noticed that the source of the lights on the building are visible at night from the roadway.	
I	(9) All loading and unloading areas, outside storage areas, and refuse receptacles shall be screened from casual view from the public rights-of-way and adjoining land uses.
There is insufficient detail on the plan to indicate compliance with dimensional requirements of Sec. 94-293 and 94-173(b). Staff has noticed significant storage of material on the south side of the building which has the potential to impede emergency access to the building.	
D/R	(10) Site plans shall meet the driveway, traffic safety, and parking standards of the city in such manner as necessary to address the following:
	a. Safe and efficient vehicular and non-vehicular circulation, including parking areas, non-motorized linkages to abutting parcels, uses, sidewalks, and trails.
	b. Shared driveways and service drives.
	c. Adequate and properly located utilities.
PARKING - The site plan indicates that the existing parking lot will adequately handle the parking demand. However, no parking plan is provided that adequately demonstrates parking demand and the existing facility's ability to accommodate demand. Pursuant to Section 94-292(g)(2) the Planning Commission may defer parking space requirements only where the applicant has demonstrated that the required parking standards is excessive. Table 100-5 requires .33 parking spaces for each 100 square feet of usable floor area for industrial facilities and that spaces measure 200 s.f. ea (10x20). After this addition, the facility will achieve 673,980 square feet, and 2,224 parking spaces would be required. It is staff's opinion that the applicant has not adequately demonstrated parking demand and capacity. More information is required prior to approval.	

SIDEWALKS - The City is holding $4,500 which was received from Gestamp after the 2012 expansion (PC Resolution 2011-03) as security for the completion of the sidewalk. As discussed in the Memo dated Sept. 26, 2011 and the City Engineer's email, due to a shallow gas line at the corner, an alternative sidewalk connection is necessary. Staff recommends reviewing this issue and amending the site plan to accommodate the remaining sidewalk, to be installed by Gestamp. Upon completion, Gestamp may grant a sidewalk easement to the City for the purpose of future maintenance, and the City will refund the money being held.

TRAFFIC, DRIVEWAYS AND SERVICE DRIVES – The plan proposes a second access point along Trillium Drive. There appears to be no record of a Traffic Study done previously per Sec. 94-176(g) and the traffic information provided is specific to staffing only. Additional traffic information is required which includes all trips generated to/from the site – employees, freight deliveries, etc.

UTILITIES – The plan appears to meet the requirements for utilities. See City Engineer email.

R	(11) Provisions shall be made for proposed common areas and public features to be reasonably maintained.

See above recommendation for sidewalk easement to City.

	(12) The site plan submittal shall demonstrate compliance with all applicable requirements of this chapter, chapters 58 and 74, the building code, and county, state, and federal law.
M/I	Chapter 94 – Zoning and Chapter 100 – Dimensional Requirements

The plan appears to the meet the building height, setbacks and lot coverage site development standards listed in Section 94-121(c) and Tables 100-1 and 100-2 as noted on the plan sheets.

There is a discrepancy in total square footage of the addition. The application states 49,200 but the footprint on sheet A2.0 shows only 47,500 s.f. This will need to be confirmed prior to approval.

M	Sec. 94-172(3) Vision clearance across corner lot.

The proposed plan appears to meet the requirements for vision clearance where the drives intersect with the roads. There appear to be no obstructions caused by landscaping or signage.

D/R	*Sec. 94-241 Landscape, screening and buffer requirements*

If the applicant submits a request for waivers from the landscaping requirements, the Planning Commission may choose to waive the requirements as requested so long as the intent to provide landscaping within parking areas, and to enhance aesthetic and ecological qualities, character, privacy, and land value is met. The Planning Commission has the option to accept the proposed plan and waive the requirements for the landscaping pursuant to Section 94-241 (e)(6), or require the plan to be revised with the required vegetation.

Per Sec. 94-241 the site is required to have:
Sec. 94-241(c)8 – 10% of the site area shall be landscaped with grasses and other live groundcovers, planting beds, and trees, or combinations thereof, and the site shall include a minimum of one tree per 10,000 square feet of disturbed land, or fraction thereof…
With the existing vegetation the plan appears to meet this requirement.

Sec. 94-241(e)(1) – Buffer on all sides of the property: if the applicant cannot reasonably comply with the buffer zone standards, then the Planning Commission can determine the character of the buffer based upon the standards listed in Sec. 94-241(e)(3).
The site does not appear to meet the buffer requirements, however, the buffers were previously approved as is. The applicant is proposing an increase in plantings in buffers. In addition, the buffer zones are

separated by a street. Per Sec. 94-241(e)(6) the Planning Commission has the ability to waive requirements in Sec. 94-241 and specifically in (4) If two zoning districts requiring a buffer zone are separated by a street, the design of the buffer zone shall be determined by the designated site plan approval body. The Master Plan suggests that landscaping be encouraged as an important factor in balancing growth with community character. Sec. 94-241(i) – Off-street parking landscape development standards require one canopy tree and 100 sq. ft. of landscaped area per eight spaces. Landscaped areas shall be protected by a raised standard or rolled concrete curb. *The applicant has not proposed any landscaping changes to the existing parking area. The parking lot does not meet the landscaping requirements for interior trees and shading, however, this was previously approved and is considered pre-existing with no proposed changes. If parking is to be added, staff recommends adding interior trees.*	
M	*Chapter 58 - Signs*
No new or expanded freestanding sign is proposed. Any proposed signage will require a separate building permit subject to the requirements of Chapter 58 of the Zoning Ordinance, including Division 2 of said chapter.	

The applicant has submitted a Final Site Plan that, at this time, <u>does not</u> appear to contain the necessary information to determine compliance with the zoning ordinance, and the standards for approval of a Special Use Permit and Final Site Plan review.

Therefore, the following motion is offered for consideration:

<u>MOTION</u>
Motion to continue to (future meeting, time/date certain) to allow the applicant time to revise the application materials and plans for consideration of approval.

Staff recommends that a Special Meeting be considered in two weeks on Tuesday, August 24, 2021 at 6:30 p.m.

<u>Attachments:</u>
1. Memo regarding sidewalks dated September 26, 2011
2. Agency Comments Received
3. Application, supplemental materials and plans submitted by applicant

City of Mason

201 W. Ash St.
P.O. Box 370
Mason, MI 48854-0370
www.mason.mi.us

City Hall 517 676-9155
Police 517 676-2458
Fax 517 676-1330
TDD 1-800-649-3777

September 26, 2011

Mr. Richard Jovanovich
Lee Contracting
631 Oakland Ave.
Pontiac, MI 48342

Re: 200 E. Kipp Road – Sidewalks

Dear Mr. Jovanovich:

This letter is to serve as a summary of the results of our meeting on September 14, 2011 regarding the sidewalk approach at the southeast corner of Kipp and Hull Roads.

In our meeting is was reported that due to the existing grades and utilities it would be very difficult to install the sidewalks per plan without moving/relocating utilities and substantially rebuilding the intersection to meet ADA standards. After great deliberation the group adjourned to the field to get a better feel of the constraints discussed. Upon inspection it was confirmed that the existing utilities and grade presented a considerable obstacle beyond the ability to solve within the timeframe required by City resolution.

It was agreed by all that the sidewalk could be installed and stopped at a point to the east of the intersection that aligned with the east end of the CP Federal Credit union building and at the "right turn only" sign on Hull Road from the south.

Therefore, the City does hereby allow Gestamp to temporarily suspend the installation of the sidewalk at the intersection as described above until such time as the agencies listed herein are able to collectively determine the appropriate solution and location/design of sidewalk crossings for the aforementioned intersection corner. However, this does not absolve Gestamp's obligation to provide sidewalk in this location, it simply allows them to temporarily suspend construction of the sidewalk. Also, the City reserves the right to hold bond money equivalent to the cost of completing the unfinished portion of sidewalk.

We sincerely appreciate Gestamp's and all other agencies that agreed to meet on such short notice to work toward a solution on this issue. Thanks to everyone who attended and helped provide the information necessary for us to determine an acceptable solution to this complicated issue.

Sincerely,

David E. Haywood
Zoning & Development Director

cc: Martin Colburn, City Administrator, City of Mason
Ken Baker, City of Mason
Don Heck, Wolverine Engineering
Jeff Bowling, Gestamp
Francisco Llinas, Ingham County Road Commission
Dan Chapman, Ingham County Road Commission
Jeff Hall, JH Concrete

From: John Heckaman
To: Elizabeth Hude
Cc: Tim Schmitt; Ronald F. Rau
Subject: Re: 200 E Kipp Rd - Gestamp Expansion
Date: Wednesday, July 28, 2021 9:38:30 AM

We can do it.
Thanks
John

John C. Heckaman

Charter Township of Meridian
Dept. of Community Planning and Development
Chief Building Inspector
517.853.4516

From: Elizabeth Hude <elizabethh@mason.mi.us>
Sent: Wednesday, July 28, 2021 9:25 AM
To: John Heckaman <heckaman@meridian.mi.us>
Cc: Tim Schmitt <schmitt@meridian.mi.us>; Ronald F. Rau <rau@meridian.mi.us>
Subject: RE: 200 E Kipp Rd - Gestamp Expansion

Staffing – any issues taking the permit in or send to State?

~Elizabeth

517-978-0206 ph
Internal ext. 206

From: John Heckaman <heckaman@meridian.mi.us>
Sent: Wednesday, July 28, 2021 8:38 AM
To: Elizabeth Hude <elizabethh@mason.mi.us>
Cc: Tim Schmitt <schmitt@meridian.mi.us>; Ronald F. Rau <rau@meridian.mi.us>
Subject: Re: 200 E Kipp Rd - Gestamp Expansion

Elizabeth,
A preliminary review of the applicable code references including area, occupant load, egress requirements, use and occupancy classification, etc all seem to be correct.
What are you referring to for 'capacity'? If you are referring to occupant load of 500+, I'm not concerned.
Thanks
John

John C. Heckaman

Charter Township of Meridian
Dept. of Community Planning and Development

Chief Building Inspector
517.853.4516

From: Elizabeth Hude <elizabethh@mason.mi.us>
Sent: Tuesday, July 27, 2021 3:55 PM
To: John Heckaman <heckaman@meridian.mi.us>
Cc: Tim Schmitt <schmitt@meridian.mi.us>; Ronald F. Rau <rau@meridian.mi.us>
Subject: FW: 200 E Kipp Rd - Gestamp Expansion

John,

Do you have any comments on this? Will capacity be an issue?

~Elizabeth

517-978-0206 ph
Internal ext. 206

From: Elizabeth Hude <elizabethh@mason.mi.us>
Sent: Monday, July 12, 2021 11:12 AM
To: Elizabeth Hude <elizabethh@mason.mi.us>
Subject: 200 E Kipp Rd - Gestamp Expansion

Hello,

In accordance with Sec. 94-225(f) and 94-394(d) of the City of Mason Code, you are receiving notice that we are in receipt of a request from:
Alan Boyer, LSG Engineers & Surveyors, on behalf of Gestamp Mason, LLC has submitted a request for a Special Use Permit and approval of a Final Site Plan for construction of a new 49,200 sq. ft. addition used as a Finish Goods Product Storage (Low Bay) and to perform other related site improvements on property located at 200 E. Kipp Rd, parcel 33-19-10-16-100-024. The parcel is zoned M-2 General Manufacturing District. The proposal is shown on the following plans and documents submitted on July 6, 2021 available at the link here.
A public hearing on the proposed project will be scheduled during the City of Mason Planning Commission's regular meeting on Tuesday, August 10, 2021 at 6:30 p.m. at 201 W. Ash Street in the Sycamore Room. Please provide written comments or concerns to our department on or before Tuesday, August 10th. Should you have any questions regarding the development proposal, please do not hesitate to call Elizabeth A. Hude, AICP, Community Development Director at (517) 978-0206.

Thank you,

Elizabeth A. Hude, AICP
Community Development Director

City of Mason l Office: 517-978-0206

201 W. Ash Street l FAX: 517-676-1330
Mason, MI 48854 l elizabethh@mason.mi.us
www.mason.mi.us l Internal Ext. 206

From: Donald Heck
To: Elizabeth Hude
Cc: Michael Olson
Subject: Gestamp 2021 Expansion
Date: Tuesday, July 27, 2021 10:31:48 AM
Attachments: image003.png

Ms. Hude:

Pursuant to the City of Mason Zoning Ordinance (Chapter 94 of the Code of Ordinances) and in particular, Section 94-2 and Section 94-226 (c), we have reviewed the plans for the Gestamp 2021 expansion as prepared by LSG Engineers and Surveyors dated July 2, 2021.

Through the course of review we have the following questions and/or comments:

1. The sidewalk connection from the parking lot to Hull Road consists of a set of steps to transverse the slope between Gestamp's parking lot and Hull Road. It is recommended that this connection be reviewed in an effort to meet ADA requirements.
2. During previous expansions, the sidewalks along Kipp Road and Hull Road have been constructed but due to shallow gas utilities at the corner, the sidewalks have not been connected. In an effort to complete this sidewalk connectivity and pursuant to Section 94-2(6) it is recommended that Gestamp and the City of Mason coordinate for the construction of this sidewalk in an easement that traverses the Gestamp property.
3. Pursuant to vehicle access during construction (particularly emergency vehicle access) it is recommended that a construction staging plan be provided. This plan should clearly indicate the drive lanes in and around the building including how access to the structure will be maintained during construction.
4. Pursuant to the requirements of Section 94-2(8) the City of Mason requests a list of the materials stored on-site, specifically what is being stored under the proposed canopy area.
5. The fire hydrant, as shown on Plan Sheet C6.1, shall be revised to note the hydrant shall be EJ Model 5BR with two (2) 5-inch Storz connections. Hydrants shall be painted yellow.
6. The plans should also note the valves on the 10-inch water main shall be EJ Flow Master resilient seat gate valves.
7. Pursuant to Section 85-152 of the Code of Ordinances, any storm drain that will be within the footprint of the building expansion shall be sealed in such a manner as to prevent the discharge of any untreated waste into the storm system and ultimately into waters of the State. Any floor drains with the building shall be connected to the sanitary sewer system.
8. A drain maintenance agreement that encompasses all of the on-site storm water collection and detention basins shall be executed upon completion of this expansion.

We appreciate the opportunity to provide these comments to the City of Mason.

As always if you have any questions or require additional information, please do not hesitate to call.

Sincerely,

Donald B. Heck, PE
Wolverine Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854-1169
Ph: 517.676.9200 Fx: 517.676.9396
donh@wolveng.com http://www.wolveng.com

From: Kerry Minshall
To: Elizabeth Hude
Subject: RE: Gestamp 2021 Expansion
Date: Tuesday, July 27, 2021 6:03:54 PM
Attachments: image001.png
image002.png

Don's email captures my concerns about access roads and the hydrant connections.
Additionally I would like to know if they will be storing any hazardous chemicals or products in the addition and are they up to date with the Ingham County P-2 reporting?
Kerry

Chief Kerry Minshall
City of Mason Fire Department
201 W. Ash Street
Mason, MI 48854
Office 517-244-9025
Cell 517-749-5974
Fax 517-244-9028

From: Elizabeth Hude <elizabethh@mason.mi.us>
Sent: Tuesday, July 27, 2021 3:42 PM
To: Kerry Minshall <kerrym@mason.mi.us>
Subject: FW: Gestamp 2021 Expansion

Kerry,

Does Don's email below address everything you had concerns about or will you be sending me a separate email to correlate with Ch 26 or any other concerns you have?

~Elizabeth

517-978-0206 ph
Internal ext. 206

From: Donald Heck <donh@wolveng.com>
Sent: Tuesday, July 27, 2021 10:32 AM
To: Elizabeth Hude <elizabethh@mason.mi.us>
Cc: Michael Olson <michaelo@mason.mi.us>
Subject: Gestamp 2021 Expansion

Ms. Hude:

Pursuant to the City of Mason Zoning Ordinance (Chapter 94 of the Code of Ordinances) and in particular, Section 94-2 and Section 94-226 (c), we have reviewed the plans for the Gestamp 2021 expansion as prepared by LSG Engineers and Surveyors dated July 2, 2021.

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Sincerely,

Donald B. Heck, PE
Wolverine Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854-1169
Ph: 517.676.9200 Fx: 517.676.9396
donh@wolveng.com http://www.wolveng.com

From:	Don Hanson
To:	Elizabeth Hude
Subject:	Declined: DEVELOPMENT REVIEW - GESTAMP EXPANSION (200 E KIPP RD)
Start:	Monday, July 26, 2021 3:00:00 PM
End:	Monday, July 26, 2021 4:00:00 PM
Location:	2nd floor Train - Maple

Elizabeth – I will be on vacation. Seeing as this is an improvement…me usual…good lighting…signage.

Don

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2021-AGL-19567-OE

Issued Date: 07/19/2021

Damian Starr
Wieland
4162 English Oak Dr
Lansing, MI 48911

**** THIS IS NOT A DETERMINATION ****

Additional information is required before we can complete an aeronautical study concerning:

Structure:	Building Gestamp - Mason
Location:	Mason, MI
Latitude:	42-33-54.18N NAD 83
Longitude:	84-26-27.03W
Heights:	915 feet site elevation (SE) 948 feet above ground level (AGL) 1863 feet above mean sea level (AMSL)

Verify and determine correct overall structure height above ground level (AGL). Enter the total structure height above ground level, including any top mounted appurtenances in whole feet rounded to the next highest foot. The AGL height must not include the site elevation.

See attachment for additional information.

If data is changed as a result of FAA verification, it will be necessary for you to ensure the corrected information is also on file with the FCC (if applicable).

NOTE: IF NO RESPONSE IS RECEIVED WITHIN 30 DAYS OF THE DATE OF THIS LETTER, ACTION WILL BE TAKEN TO TERMINATE THIS AERONAUTICAL STUDY.

If we can be of further assistance, please contact our office at (404) 305-6616, or Robert.K-CTR.Kiser@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2021-AGL-19567-OE.

Signature Control No: 488123844-488470207 (ADD)
Robert Kiser
Technician

Attachment(s)
Additional Information

Additional information for ASN 2021-AGL-19567-OE

You proposal indicates an above ground level height of 948'. Please confirm the correct height in AGL.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION
PERMIT

Issued To:

Gestamp Mason, LLC
Attention: Mr. Christopher Trevisan
200 Kipp Road
Mason, Michigan 48854

Permit No:	**WRP030048 v.1**
Submission No.:	**HP9-G42G-CZ6GY**
Site Name:	**33-200 Kipp Rd-Mason**
Issued:	**August 3, 2021**
Revised:	
Expires:	**August 3, 2026**

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- ☒ **Part 301, Inland Lakes and Streams**
- ☐ **Part 303, Wetlands Protection**
- ☐ **Part 315, Dam Safety**
- ☒ **Part 31, Water Resources Protection (Floodplain Regulatory Authority)**
- ☐ **Part 323, Shorelands Protection and Management**
- ☐ **Part 325, Great Lakes Submerged Lands**
- ☐ **Part 353, Sand Dunes Protection and Management**

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:

Excavate 2656 cubic yards of fill for expansion of existing basin.

Relocate excavated fill to existing spoil pile as shown on plans.

Waterbody Affected: Sycamore Creek
Property Location: Ingham County, City of Mason, Town/Range/Section 02N01W16, Property Tax No. 33-19-10-16-100-024

Authority granted by this permit is subject to the following limitations:

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.

B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.
C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.
D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.
G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
I. Permittee shall notify EGLE within one week after the completion of the activity authorized by this permit.
J. This permit shall not be assigned or transferred without the written approval of EGLE.
K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.
L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).
M. In issuing this permit, EGLE has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.
N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.
O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, EGLE may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.
P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from EGLE. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by EGLE prior to being implemented.
Q. This permit may be transferred to another person upon written approval of EGLE. The permittee must submit a written request to EGLE to transfer the permit to the new owner. The new owner must also submit a written request to EGLE to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all the above information may be provided to EGLE. EGLE will review the request and, if approved, will provide written notification to the new owner.
R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and

specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.

S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.

T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).

U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.

V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.

X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.

Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:

1. Authority granted by this permit does not waive permit or program requirements under Part 91 of the NREPA or the need to acquire applicable permits from the CEA. To locate the Soil Erosion Program Administrator for your county, visit www.mi.gov/eglestormwater and select "Soil Erosion and Sedimentation Control Program" under "Related Links."

2. The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state, or federal approval or authorization necessary to conduct the activity.

3. No fill, excess soil, or other material shall be placed in any wetland, floodplain, or surface water area not specifically authorized by this permit, its plans, and specifications.

4. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.

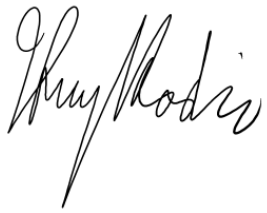
5. The permit placard shall be kept posted at the work site in a prominent location at all times for the duration of the project or until permit expiration.

6. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by EGLE, will be for a five-year period beginning on the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.

7. Any other filling, grading, or construction within the 100-year floodplain will require a separate EGLE permit before starting the work.

8. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

9. Fill shall not be placed to prevent surface water drainage across the site. Site runoff shall be directed to public or natural drainage ways and not unnaturally discharged onto adjacent properties.



Issued By: Minh-Huy Radics
Lansing District Office
Water Resources Division
517-243-3105

cc: City of Mason Clerk
Ingham County Drain Commissioner
Mr. Alan Boyer

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

GESTAMP MASON 2021 EXPANSION
PROPOSED PROJECT AREA – LOCATION MAP

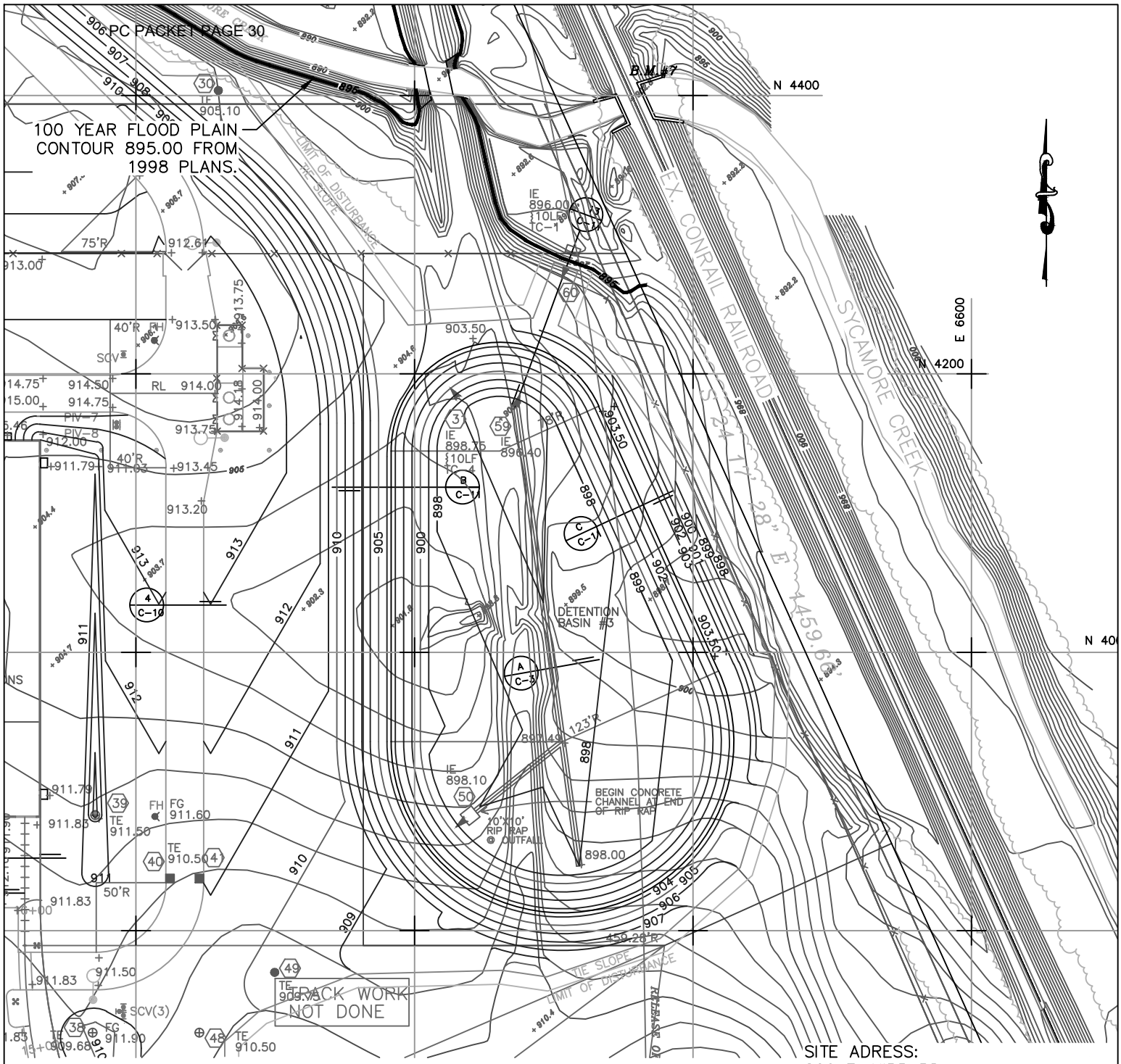
APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	1 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	–

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

2000 0 2000

Scale 1" = 2000'

THIS SHEET
DATUM: NAVD 88



SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

DETENTION BASIN #3 AS PROPOSED IN 1998. BASE FLOOD ELEVATION NOTED ON 1998 PLANS AS 895.00. TOTAL STORAGE BELOW ELEV. 903.50 (NGVD 29) = 338,871 CU. FT. VOLUME BELOW ELEV. 902.6 (NGVD 29) = 272,672 CU. FT.

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

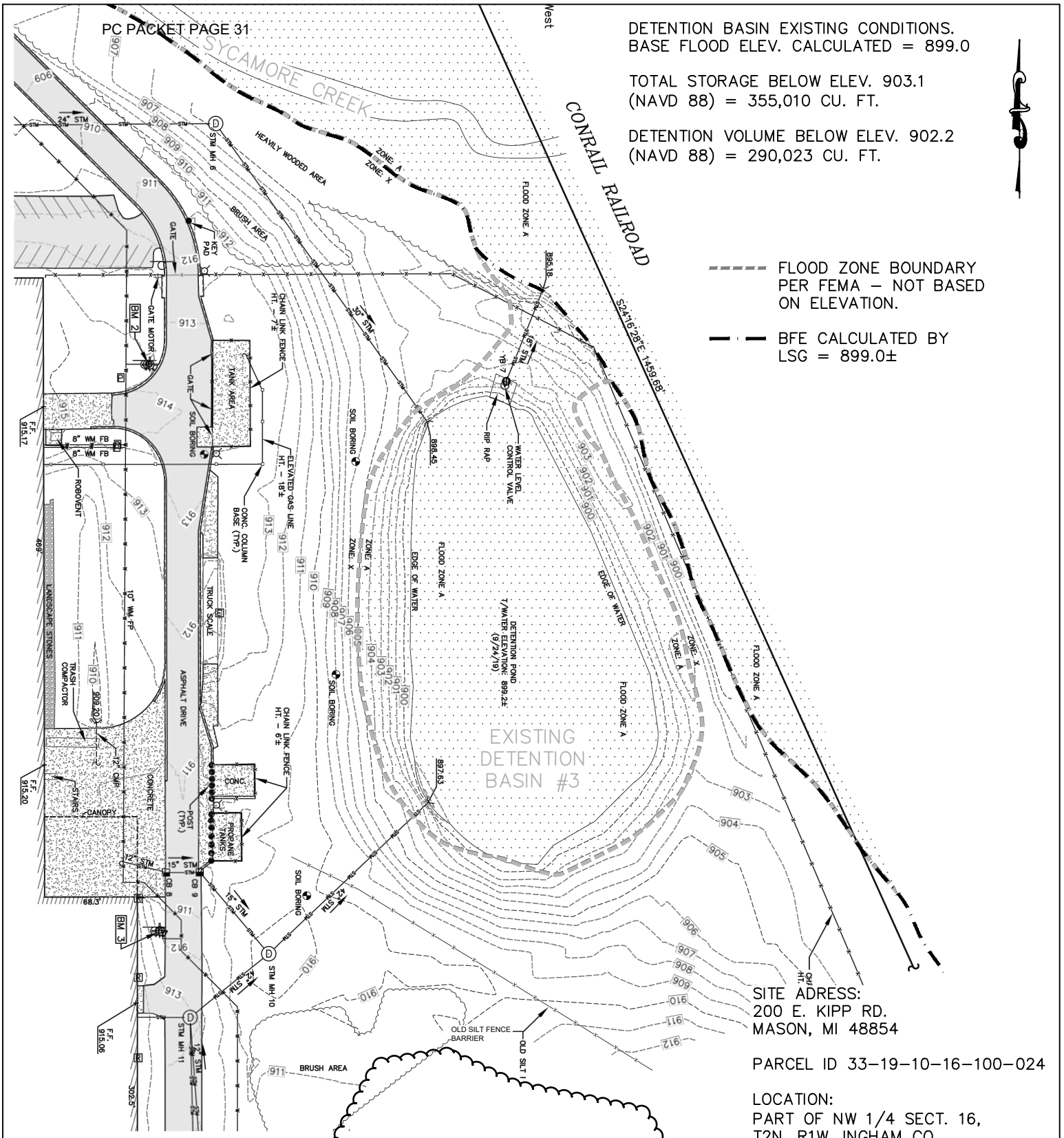
100 0 100

Scale 1" = 100'

THIS SHEET DATUM: NGVD 29

GESTAMP MASON 2021 EXPANSION
ORIGINAL DETENTION BASIN #3 – 1998 PLANS

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	2 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	–



DETENTION BASIN EXISTING CONDITIONS.
BASE FLOOD ELEV. CALCULATED = 899.0

TOTAL STORAGE BELOW ELEV. 903.1
(NAVD 88) = 355,010 CU. FT.

DETENTION VOLUME BELOW ELEV. 902.2
(NAVD 88) = 290,023 CU. FT.

FLOOD ZONE BOUNDARY PER FEMA – NOT BASED ON ELEVATION.

BFE CALCULATED BY LSG = 899.0±

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

Existing soils stockpile

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

100 0 100

Scale 1" = 100'

THIS SHEET DATUM: NAVD 88

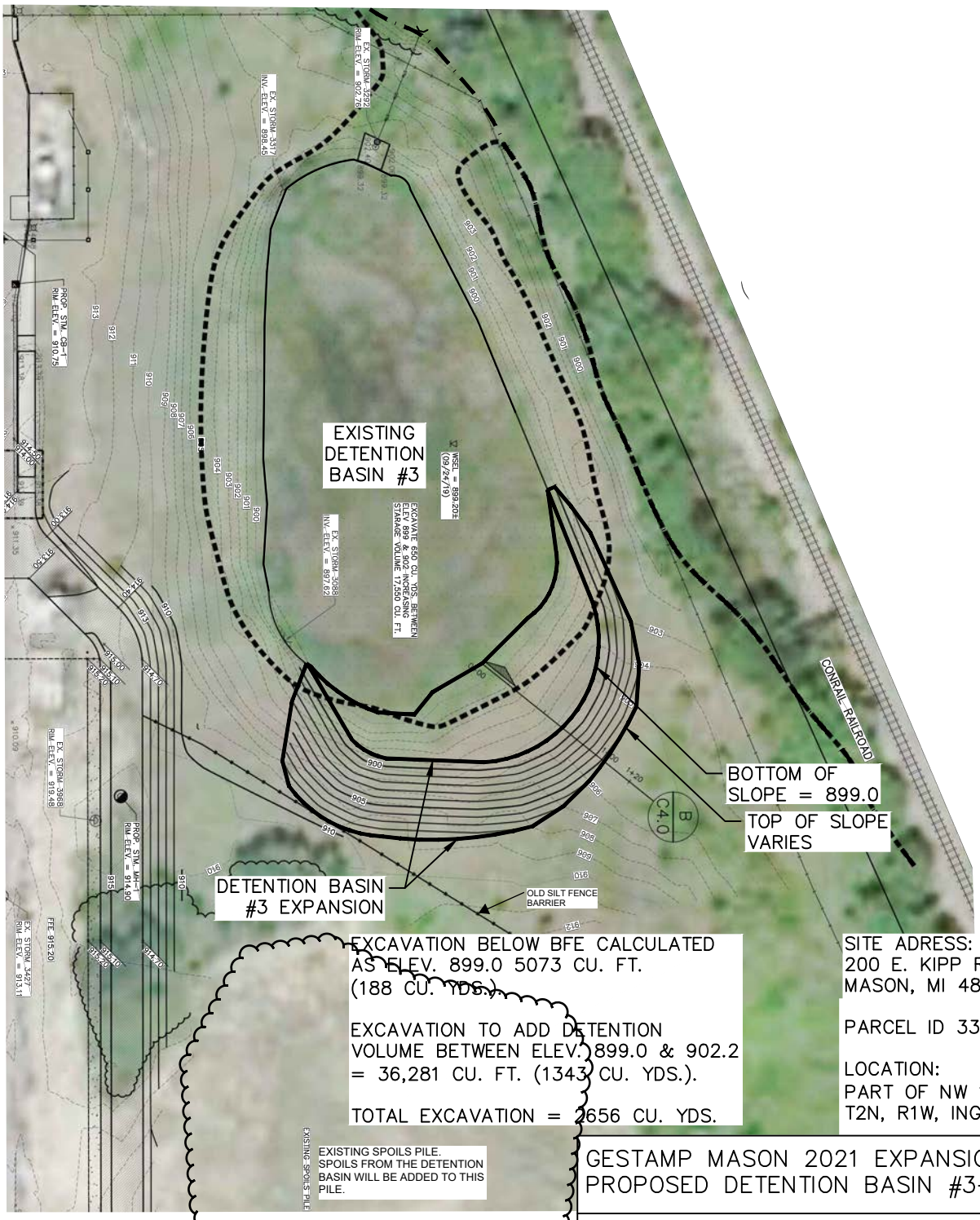
GESTAMP MASON 2021 EXPANSION
EXISTING DETENTION BASIN #3 – LSG TOPO

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	3 OF 5
DATE:	JULY 19, 2021 REV.
EXHIBIT:	–

SYCAMORE CREEK

BFE BOUNDARY PER FEMA – NOT BASED ON ELEVATION.

BFE CALCULATED BY LSG = 899.0±



EXCAVATION BELOW BFE CALCULATED AS ELEV. 899.0 5073 CU. FT. (188 CU. YDS.).

EXCAVATION TO ADD DETENTION VOLUME BETWEEN ELEV. 899.0 & 902.2 = 36,281 CU. FT. (1343 CU. YDS.).

TOTAL EXCAVATION = 2656 CU. YDS.

EXISTING SPOILS PILE. SPOILS FROM THE DETENTION BASIN WILL BE ADDED TO THIS PILE.

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16, T2N, R1W, INGHAM CO.

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

100 0 100

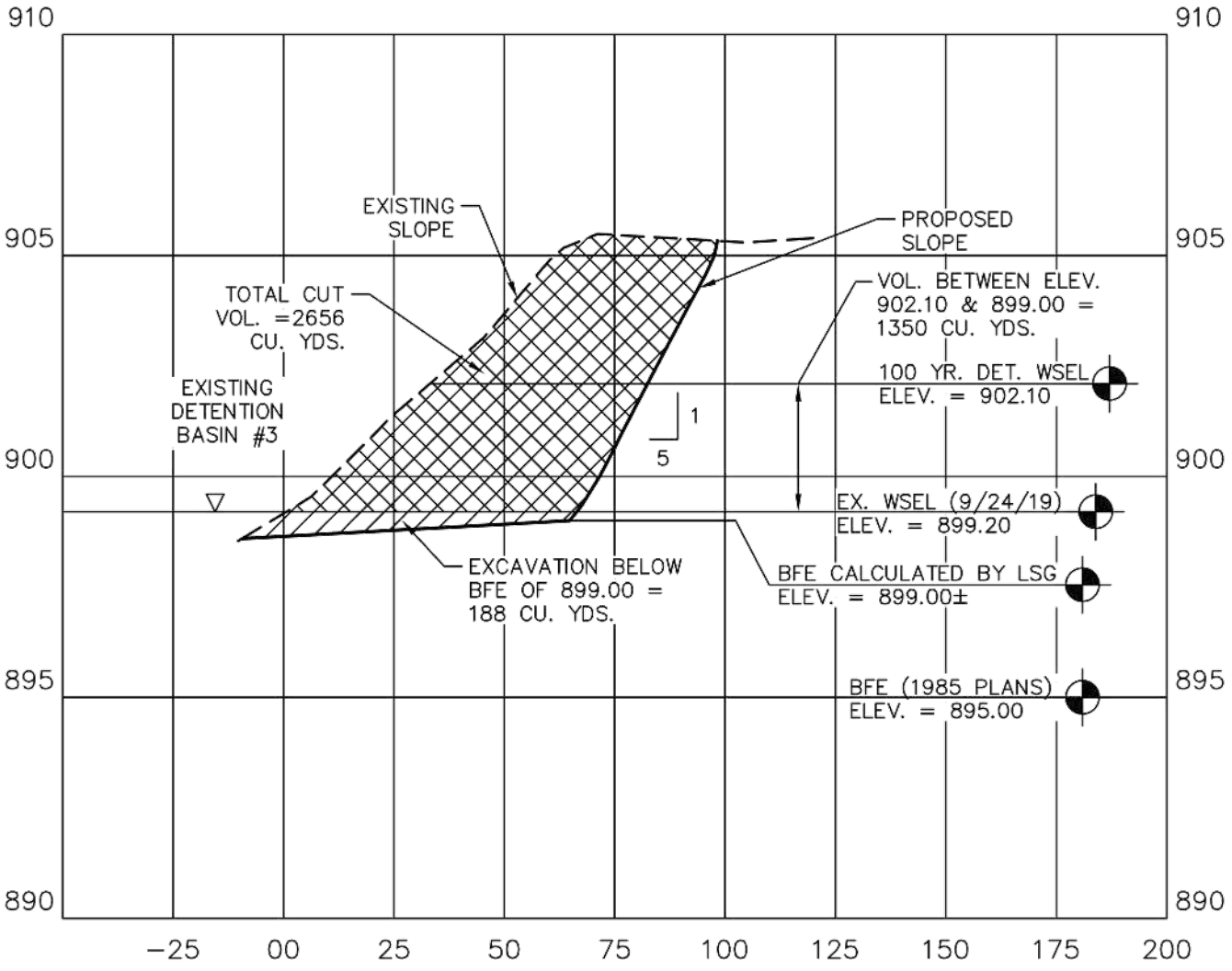
Scale 1" = 100'

THIS SHEET DATUM: NAVD 88

GESTAMP MASON 2021 EXPANSION
PROPOSED DETENTION BASIN #3–GRADING PLAN

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	4 OF 5
DATE:	JULY 19, 2021 REV.
EXHIBIT:	–

DETENTION BASIN #3 SLOPE SECTION



DETAIL B / C4.0

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

GESTAMP MASON 2021 EXPANSION
PROPOSED DETENTION BASIN #3-SLOPE SECTION

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	5 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	_

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

40 0 40

Scale 1" = 40'

THIS SHEET DATUM: NAVD 88

LSG Engineers & Surveyors

July 2, 2021

Elizabeth A. Hude, Community Development Director
City of Mason
201 West Ash Street
Mason, MI 48854

RE: Site Plan and Special Land Use Submittal
Gestamp 2021 Expansion
200 E. Kipp Road, Mason, MI

Dear Elizabeth:

Please find attached the following items for your review:

- Zoning Permit Application with attachments (Letter of Authorization, Summary of Ownership, Project Narrative)
- Submittal fee check no. 8113 in the amount of $375.00
- 2 copies Stormwater Management Plan (includes EGLE permit application)
- 2 copies Geotechnical Exploration and Engineering Report
- 2 copies Site Drawings (17 sheets including landscape plan)
- 2 copies Architectural Drawings, elevations & floor plans
- Flash drive with e-copies of above listed information.

This submittal is for both the final site plan and special land use approvals for the proposed building expansion at the Gestamp site.

I will be attending the meetings/hearings to address any questions that may arise. In the meantime, if you require any additional information or have any questions, please feel free to contact me.

Sincerely,

Alan D. Boyer, PE

Cc: Christopher Trevisan, Gestamp
Jeff Bowling, Gestamp
Damian Starr, Wieland
Blake Simon, Wieland

attachments

3135 Pine Tree Road ▪ Suite D ▪ Lansing, MI 48911 ▪ (517) 393-2902 ▪ FAX (517) 393-2608

PERMIT APPLICATION

ZONING

Applicant– Please check one of the following:	
	Preliminary Site Plan Review
X	Final Site Plan Review
X	Special Use Permit*
	Administrative Review
* includes Preliminary Site Plan Review	

DEPARTMENT USE ONLY

Application Received: _____

Tax ID: _____

Fee: _____

Receipt #: _____

Applicant Information:

Name: Alan Boyer, PE

Organization: LSG Engineers & Surveyors

Address: 3135 Pinetree Road, Suite D, Lansing, MI 48911

Telephone Number: 517-393-2902 x225 Facsimile Number: 517-393-2608

Interest in Property (owner, tenant, option, etc.): engineer and site designer

Note: If applicant is anyone other than owner, request must be accompanied by a signed letter of authorization from the owner. Letter of authorization is attached.

Property Information:

Owner: Gestamp Mason LLC Telephone Number: 517-244-8816

Property Address: 200 E. Kipp Road, Mason, MI 48854

Legal Description: If in a subdivision: Subdivision Name: _____ Lot Number: _____

If Metes and Bounds (can be provided on separate sheet): Legal description is provided on the attached sheet.

APPLICANT CERTIFICATION

By execution of this application, the person signing represents that the information provided and the accompanying documentation is, to the best of his/her knowledge, true and accurate. In addition, the person signing represents that he or she is authorized and does hereby grant a right of entry to City officials for the purpose of inspecting the premises and uses thereon to verify compliance with the terms and conditions of any Special Use Permit and/or Site Plan approval issued as a result of this application.

Signature: Alan D. Boyer Date: 20210702

Requested Description:

Written Description: Please use this section to describe the use or uses proposed. Attach additional pages, if necessary.

The existing use is industrial. This application pertains to a proposed building expansion and related site improvements and is identified as Gestamp 2021 Expansion.

Available Services

Public Water [X] Yes ☐ No

Paved Road (Asphalt or Concrete) [X] Yes ☐ No

Public Sanitary Sewer [X] Yes ☐ No

Public Storm Sewer ☐ Yes [X] No

Estimate the Following

Traffic Generated existing (no new traffic)

Total Employees 496

Population Increase 0

Employees in Peak Shift 239

House of Operation 12:00 AM to 12:00 PM

Total Bldg. Area Proposed 624,780 sf exist. 673,980 sf prop

Mon. Day through Fri. day

Parking Spaces Provided 331

Project Phasing

This project will be completed in: ☐ One Phase [X] Multiple Phases – Total No. of Phases: 2

Note: The phases of construction for multi-phase projects must be shown on the site plan

Application Materials

The following are checklists of items that generally must be submitted with applications for Preliminary Site Plan Review, Final Site Plan Review, and Special Use Permits. Applicants should review Articles VI and VII of Chapter 94 of the Mason Code for a complete listing of application requirements. All site plan drawings must comply with the requirements of Section 94-226(d) of the Zoning Ordinance. Incomplete applications will not be processed.

- [X] Completed application form
- [X] 2 copies of full scale site plan drawings
- [X] Plans submitted on CD or PDF (email is acceptable)
- [X] Legal description
- [X] Proof of ownership/owner authorization
- [X] Construction schedule for proposed project
- [X] Construction calculations for utilities
- [X] Fee (see below)
- [X] Any other information deemed necessary

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Application Fee

All requests must be accompanied by a fee, as established by the City Council. The fee schedule for Preliminary Site Plan Reviews, Final Site Plan Reviews, and Special Use Permits is as follows (As of October 16, 2006):

Administrative Reviews	$70.00
Preliminary Site Plan Reviews	$200.00
Final Site Plan Review	$100.00
Special Use Permits (includes preliminary site plan review)	$275.00

Engineering Review	$220.00*

*Two—hour minimum fee for projects increasing demand on public utilities. Actual fees incurred are billed to applicant upon completion of review.

Application Deadlines

Preliminary Site Plan/Special Use Permit Review

Applications for Preliminary Site Plan Review may be submitted at any time. Complete applications must be received a minimum four (4) weeks prior to a Planning Commission meeting to be placed on the agenda. Upon receipt of a complete application, a public hearing will be scheduled for the next regularly scheduled meeting (for Special Use Permits only). The Planning Commission has the final authority to approve, approve with conditions or deny an application for Preliminary Site Plan/Special Use Permit Review. The Planning Department staff will issue a letter to the applicant advising of any changes or revisions that may be necessary prior to making application for Final Site Plan Review.

Final Site Plan Review

Complete applications must be received a minimum of four (4) weeks prior to a Planning Commission meeting to be placed on an agenda. The Planning Commission has the final authority to approve, approve with conditions or deny an application for Final Site Plan Review. Planning Commission meetings are held on the second Tuesday after the first Monday of every month, unless the Tuesday is a Township recognized holiday, in which case the meeting is held on the following day (Wednesday).

Staff Report

The Planning Department Staff will prepare a report to the Planning Commission regarding an application for Preliminary Site Plan Review, Final Site Plan Review or Special Use Permit. The report will explain the request and review whether it complies with the zoning standards of the Mason Code. Staff will present the findings of that report during the Planning Commission meeting. An applicant who wishes to obtain one (1) copy of that report, at no cost, prior to the meeting must provide a written request to the Planning Department. The report is generally complete on the Friday before the meeting and can be mailed to the applicant or picked up by the applicant in the Planning Department.

Resources: More questions? Please contact our Customer Service Desk at 517.676.9155.

Revised 7.2.2018 (Community Development)

GESTAMP MASON, LLC
200 E. Kipp Rd • Mason, Michigan 48854
Phone (517) 244-8800 Fax (517) 244-8899
www.gestamp.com

LETTER OF AUTHORIZATION FROM PROPERTY OWNER
GRANTING PERMISSION FOR DESIGNATED AGENT TO OBTAIN PERMITS
FROM THE CITY OF MASON / INGHAM COUNTY / STATE OF MICHIGAN

In the matter of the proposed Gestamp Expansion 2021 project, I/We, the undersigned, is/are the owners of the property located at 200 E. Kipp Road, Mason, MI, 48854 and grant permission to LSG Engineers & Surveyors to apply to the City of Mason, Ingham County and the State of Michigan (EGLE) for permits, as a designated agent, and discuss with the those agencies issues and concerns regarding submission, review comments and requirements of any submitted application.

Christopher Trevisan
Gestamp Mason, LLC

6/21/2021
Date

SUMMARY OF PROPERTY OWNERSHIP

Parcel Owner: Gestamp Mason, LLC
200 E. Kipp Road
Mason, MI 48854

Parcel ID No. 33-19-10-16-100-024

Date of Sale: 1/1/2005

Grantor: SSAB Hardtech Inc.
Grantee: Gestamp US
Instrument: Warranty Deed

Legal Description:

PART OF THE NW 1/4 OF SECTION 16, T2N, R1W, VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF SAID SECTION 16; ALONG THE NORTH SECTION LINE IN KIPP ROAD (100 FEET ROW), THENCE S89°45'58"E 1033.64 FEET TO THE WESTERLY LINE OF THE CONRAIL RAILROAD R.O.W., THENCE S24°17'28"E, 1459.66 FEET TO A POINT OF CURVATURE; THENCE CONTINUING SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT 408.57 FEET (RADIUS-2861.25 FEET, DELTA-8°10'53", CHORD BEARING S20°12'01"E, 408.22 FEET) THENCE N89°43'34"W, 820.40 FEET; THENCE S00°06'19"W, 31.32 FEET, THENCE N89°43'34"W, 197.00 FEET; THENCE S00°06'19"W, 386.00 FEET; THENCE ALONG THE NORTH RIGHT OF WAY LINE OF TRILLIUM COURT (66 FEET R.O.W.) N89°53'41"W, 754.03 FEET TO THE WEST SECTION LINE IN HULL ROAD, (100 FEET R.O.W.) THENCE ALONG SAID SECTION LINE N00°34'38"W, 2128.84 FEET TO THE NW SECTION CORNER AND THE P.O.B.

PARCEL B

PART OF NW 1/4 OF SECTION 16, T2N, R1W, VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN, BEING MORE PARTIALLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF SAID SECTION 16; ALONG THE NORTH SECTION LINE IN KIPP ROAD (100 FEET ROW), THENCE S89°45'58"E, 1033.64 FEET TO THE WESTERLY LINE OF THE CONRAIL RAILROAD ROW, THENCE S24°17'28"E, 1459.66 FEET TO A POINT OF CURVATURE; THENCE CONTINUING SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT 408.57 FEET (RADIUS = 2861.25 FEET, DELTA = 8°10'53", CHORD BEARING S20°12'01"E, 408.22 FEET) TO THE POB, THENCE CONTINUING ALONG THE WESTERLY LINE OF THE CONRAIL ROW ALONG THE ARC OF A CURVE TO THE RIGHT 281.39 FEET (RADIUS = 2861.25 FEET, DELTA = 5°38'05", CHORD BEARING S13°17'32"E, 281.28 FEET); THENCE ALONG A CURVE TO THE LEFT 468.82 FEET (RADIUS = 429.28 FEET, DELTA = 62°34'21", CHORD BEARING N51°54'02"W, 445.86 FEET); THENCE S89°43'34"E 286.20 FEET TO THE P.O.B.

Ref: Ingham County Equalization records. Warranty deed is on file in the Ingham County Register of Deeds office. A copy of the deed will be provided if requested.

LSG Engineers & Surveyors

PROJECT NARRATIVE
Gestamp 2021 Expansion
City of Mason, Ingham County, Michigan

July 2, 2021

This narrative has been prepared in accordance with the City of Mason Zoning Ordinance Section 94-225 Preliminary Site Plan Review and Approval and Section 94-226 Final Site Plan Review and Approval. We have followed the order of items as set forth in the ordinance to provide for ease in review and comparison.

Section 94—225.d.1 Basic Required Submittal Standards

1. Basic Required Submittal Standards
    a. The name, address and other contact info of the applicant and designated agent is provided on the application and plans.
    b. Legal description is provided on the plans.
    c. Proof of ownership is on file at the City and with the Ingham County Register of Deeds. We have included a Summary of Property Ownership. A copy of the warranty deed can be provided if requested.
    d. Existing uses on subject and abutting properties are indicated on the plans.
    e. Zoning of subject property is indicated on the plans.
    f. The principle use of the property will remain an industrial use. This submittal is to expand that use.
    g. We are unaware of any necessary variances at this time. The remainder of this narrative and the plans provide further continuation that the proposed expansion meets or exceeds the applicable standards.
    h. Site Plan Drawing has been provided. The drawing includes the follow:
        i. North Arrow is shown.
        ii. Drawing Date is shown.
        iii. Site Size is shown.
        iv. Exhibit provided indicating property ownership.
        v. Vehicular circulation has been provided. Pedestrian access to Hull Road for access toward Meijer Thrifty Acres is proposed.
        vi. Structures and setbacks are shown.
        vii. Existing and proposed uses are shown.
        viii. Parking and curb cuts are not applicable to this submittal. The existing parking is shown. No curb cuts are proposed.
        ix. Signage is shown for the proposed cross-walk for the pedestrian access to Hull Road.
        x. Existing easements are indicated on the plans.
        xi. No new refuse facilities are proposed.
    i. Landscaping from previous approvals has been indicated on the plans. The existing landscape screening (as previously approved) is mature and screens the facility. Supplemental landscaping is shown to replace dead or missing plantings and/or enhance the existing screen and parking lot area.

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2. Additional Required Submittal Standards
    a. Subsection 94-225.d. 1 is addressed above.
    b. Zoning within 500 feet includes the following:
        i. North - C2 and M1 Zoning
        ii. East - City Limits, railroad, Ag
        iii. South – M1 Zoning
        iv. West - C-2/Ag Zoning
    c. Vicinity Map has been provided.
    d. Site Plan has been provided.
        i. Scale, north arrow, date and title have been indicated.
        ii. Existing watercourses and other natural features have been indicated.
        iii. Base Flood Elevation is estimated to be 899. With the exception of the detention basin excavation, all site elevations within the proposed development area are all above 910.
        iv. Existing and proposed rights-of-way and easements are indicated.
        v. Street names are provided.
        vi. Existing site lighting is shown. One proposed site light near the addition is the relocation of an existing light pole in the area. Other than the proposed addition building mounted lighting, no other site lighting is proposed.
        vii. New loading areas are indicated.
        viii. No new access to public streets is proposed.
        ix. Dimensions and locations of building are indicated.
        x. No lots are proposed.
        xi. No dwelling units are proposed.
        xii. Construction phases are proposed. The initial phase is the construction of the ring road relocation to move on-site truck traffic away from the proposed building construction area. The second phase includes the building erection and construction.
        xiii. Architectural elevations are provided.
        xiv. Existing and proposed grades are indicated.
        xv. Necessary calculations are provided.
        xvi. Plans have been sealed.
        xvii. No new common or open spaces are provided.
    e. Property is owned by the user of the site.
        i. Easements, covenants and articles of association are either provided or are not applicable.
        ii. The **Geotechnical Exploration and Engineering Report** dated August 22, 2019 prepared by Intertek PSI is included with this submittal.
    f. Construction is proposed to begin immediately upon approval and permitting. Building occupancy is desired in Spring of 2022 or sooner.
    g. Cost estimates are not available at this time. They can be provided if requested.
    h. A Stormwater Management Plan and Narrative has been provided. Water and Sanitary facilities have previously been constructed to accommodate the existing site development. Other than fire flow, no additional fixtures requiring water or sanitary sewer are proposed.

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i. Professionals associated with this project all have indicated their contact information on their respective plans.
j. Existing and proposed landscape information is indicated in the plans. The existing landscape screening (as previously approved) is mature and screens the facility. Supplemental landscaping is shown to replace dead or missing plantings and/or enhance the existing screen and parking lot area.

3. Supplemental Analysis and Information
   a. A soil boring report is provided with this submittal.
   b. Proof of financial ability will not be provided. Gestamp is an ongoing operation employing residents from the surrounding area.
   c. The plant expansion to provide for new product manufacturing will improve/sustain fiscal and economic conditions within the City and surrounding area and will be impacted in a positive way. The proposed project is to provide additional space to handle a change in the product manufacturing.
   d. Natural features of the subject property and surrounding properties will not be negatively impacted. Specifically the floodplain along Sycamore Creek in the northeast corner of the property will not be disturbed and will remain as a screen buffer.
   e. Public facilities and services should not be impacted by this development. No increase in water or sanitary sewer services are anticipated by this project.
   f. This development will not impact traffic flow nor is there anticipated to be a measurable change in volume.
   g. Boundary survey has been done for previous expansions and is likely on file with the City as part of previous plan submittals. The boundary is also indicated on the plans.
   h. We are not aware of any further information that would be beneficial to the City at this time.

Section 94-227 Standards for Site Plan Review and Approval

1. The site has been designed to work harmoniously with all existing conditions of the site and surrounding properties. The proposed expansion in on the side of the site away from public roads.
2. This proposed development does not impede any development or use of any surrounding properties. See note above.
3. Emergency vehicle access has been accommodated via site layout and design.
4. Public street access has been provided for in earlier development of this project. This access is still viable and no changes are proposed.
5. Stormwater management has been designed in accordance with the City of Mason and the Ingham County Drain Commissioner's standards. On-site stormwater detention is being expanded to account for the additional impervious area and will not have a detrimental impact on neighboring properties. The rate of discharge from the stormwater system is unchanged.
6. Same as 5.
7. Not applicable.
8. Existing exterior lighting has been provided as part of previous developments. The existing lighting will be evaluated to assure that it is functioning in a manner that all lighting will be downward facing and shielded to prevent light pollution onto adjacent properties. Existing site

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lighting in the area of the proposed building expansion will be relocated along the relocated ring road. Proposed lighting for the building addition is noted on the architectural drawings.

9. Proper screening exists on site for these areas.
10. Driveway, traffic safety, and parking standards have been addressed and are adequate for this proposed expansion. No increase in employee or truck traffic is anticipated.
11. No common areas are proposed.
12. We believe all necessary considerations have been made in developing this plan and that all pertinent codes and regulations have been met.

CITY OF MASON
201 WEST ASH
MASON, MI 48854
5176769155
5176761330

Invoice For PlanRevi PSUP21-003
Print Date: 07/06/2021

Pay by Account In Full

Pay by Account In Full

$ 375.00

LSG Engineers & Surveyors
3135 Pinetree Rd.
Lansing MI 48911

	Invoice No	Invoice Date	PlanReview Numbe	Address	Amount Due
	00004889	07/06/21	PSUP21-003	200 E KIPP	$ 375.00

Fee Details:	Quantity	Description	Amount Cost	Balance
	1.000	Special Use Permit	$375.00	$ 375.00

Total Amount Due $ 375.00

CITY OF MASON
P.O. BOX 370
201 W. ASH ST.
MASON MI 48854-370
Phone : (517) 676-9155
WWW.MASON.MI.US

PAID
JUL 06 2021
CITY OF MASON

Received From:
LSG Engineers & Surveyors
3135 Pinetree Rd.
Lansing MI 48911

Date: 07/06/2021 Time: 8:24:54 AM
Receipt: 100285927
Cashier: KM

FINAL SITE PLAN
SPECIAL USE
200 E KIPP

ITEM REFERENCE	AMOUNT
PMT PERMIT 00004889 101-254.00-475.000	$375.00
TOTAL	$375.00
CHECK 8113	$375.00
Total Tendered:	$375.00
Change:	$0.00

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TRAFFIC IMPACT

Gestamp 2021 Expansion - Traffic Data

Date Data Collected: Wednesday June 2, 2021

Description	Time Frame	Arrivals	Departures	Comments
Shift change 3rd/1st	5:00 am – 6:00 am	138	80	218 trips
Arrival of salaried staff	6:00 am – 8:00 am	80	0	80 trips (average 40 per hour)
Shift change 1st/2nd	1:30 pm – 2:30 pm	116	128	244 trips (324 cars in parking lot at max occupancy)
	2;30 pm – 2:45 pm	0	10	10 trips (average 40 per hour)
Departure of salaried staff	4:00 pm – 6:00 pm	0	80	80 trips (average 40 per hour)
Shift change 2nd/3rd	9:30 pm – 10:30 pm	80	80	160 trips

Peak Hour: 1:30 pm – 2:30 pm. The plant/facility peak hour occurs during the shift change between the 1st and 2nd shift. This is when the 2nd shift arrives and the 1st shift leaves. This peak hour does not coincide with the typical peak hour for the surface streets (Kipp Road and Hull Road).

A secondary peak occurs between 5:00 am and 6:00 am during the shift change between the 3rd and 1st shifts. This peak does not coincide with the typical peak hour for the surface streets.

The owner indicates that no new increase in traffic is anticipated as a result of this project.

Note: This traffic information is provided as a supplement to the Project Narrative submitted with the site plan package for the Gestamp 2021 Expansion.

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August 4, 2021

Elizabeth A. Hude, AICP, Community Development Director
City of Mason
201 West Ash Street
Mason, MI 48854

RE: Gestamp
200 E. Kipp Rd., Mason, MI

Dear Elizabeth:

On behalf of the applicant Gestamp, this letter covers the applicant's response to the initial review comments for the Gestamp site plan submittal. The response is summarized as follows:

- The applicant takes no exceptions to any of the review comments;
- The revised plans, which I am in the process of preparing, will reflect changes based on the City's review comments;
- A written response to each comment is included in RED on the attached initial staff report for your reference and as communication to the Planning Commission;
- Truck traffic data has been complied by Gestamp and is attached to this letter for use by the City for this review and future traffic planning; and,
- Also attached is a copy of EGLE Permit WRP0300048.v1 issued yesterday for the excavation of the detention basin.

We will be in attendance at the August 10th Planning Commission meeting to answer any questions and respond to any additional comments.

Sincerely,

Alan D. Boyer, PE

L:\2679 (Gestamp Mason 2021)\C:\14 (Outgoing Correspondence)\Ltr-CoM01.doc

3135 Pine Tree Road ▪ Suite D ▪ Lansing, MI 48911 ▪ (517) 393-2902 ▪ FAX (517) 393-2608

City of Mason
Planning Commission
Staff Report w/APPLICANT'S RESPONSES by LSG Engineers & Surveyors

TO: Planning Commission

FROM: Elizabeth A. Hude, AICP, Community Development Director

SUBJECT: 200 E. Kipp - Gestamp

DATE: August 5, 2021

Revised with applicant's responses, ALL IN RED BELOW.

Alan Boyer, LSG Engineers & Surveyors, on behalf of Gestamp Mason, LLC has submitted a request for a approval of a Final Site Plan for construction of a new 49,200 sq. ft. addition on an existing 624,780 sq. ft. building to be used as a Finish Goods Product Storage (Low Bay) and to perform other related site improvements on property located at 200 E. Kipp Rd, parcel 33-19-10-16-100-024. The parcel is zoned M-2 General Manufacturing District.

The proposal is shown on the following plans and documents submitted on July 6, 2021:

- Letter from Alan D. Boyer dated July 2, 2021
- Complete Permit Application
- Stormwater Management Plan (includes EGLE permit application), prepared by LSG Engineers & Surveyors, dated July 2, 2021
- Geotechnical Exploration and Engineering Report, prepared by Intertek PSI, dated August 22, 2019
- Site Plan, prepared by LSG Engineers & Surveyors, dated July 2, 2021:
    - Cover, Sheet C
    - As Built Site Survey – Existing Conditions, Sheet C1.0
    - Topographic Survey, Sheet C1.1
    - Overall Site Plan and Existing Conditions, Sheet C2.0
    - Detailed Demolition Plan, Sheet C2.1
    - Detailed Site Plan, Sheet C3.0
    - Detailed Grading Plan, Sheet C4.0
    - Detailed Utility Plan, Sheet C5.0
    - Fire Main Plan and Profile, Sheet C5.1
    - Storm Drainage Plan and Profile, Sheet C5.2
    - Miscellaneous Details, Sheet C6.0
    - Fire Main Details, Sheet C6.1
    - Storm Drainage Details, Sheet C6.2
    - Soil Erosion Control Plan, Sheet C7.0
    - Soil Erosion Control Details, Sheet C7.1

  - Soil Erosion Control Notes, Sheet C7.2
  - Landscape Plan, Sheet L1.0
- Architectural Drawings containing elevation and floor plans, prepared by William A. Kibbe & Associates, Inc., dated June 25, 2021
  - Title Sheet, Sheet TS
  - Composite Life Safety Plan, Sheet A2.0
  - Addition Floor Plan and Details, Sheet A2.1
  - Building Elevations and Sections, Sheet A4.0

The applicant paid a fee of $100, and together with the plans and documents listed above, the application appears to satisfy the submittal requirements of Sec. 94-226(c). This is a material change to a previously approved site plan and therefore subject to Planning Commission review per Sec. 94-228. *Staff previously indicated this required a Special Use Permit (update to prior). Upon closer examination of the historic files, it appears that the SUP was not required. The proposed uses for automobile parts manufacturing are allowed by right. Public comment is still welcome, however, a formal public hearing is not required. ACKNOWLEDGED.*

CONSTRUCTION SCHEDULE

In the submission letter dated July 2, 2021, it states Gestamp Mason, LLC, plans to begin construction immediately upon approval and permitting. Building occupancy is desired in Spring of 2022 or sooner. The construction will happen in two phases. Phase 1 will be the road installation and Phase 2 will be the construction of the building addition.

LAND USE/ZONING/MASTER PLAN

The site is bordered by Kipp Road to the north, Hull Road to the west, and Trillium Drive to the south. The Jackson & Lansing Railroad borders the property to the east. Approximately 850 feet of the Sycamore Creek crosses the northeast corner of the property. A portion of the 100 year floodplain is located in northeast corner of the site. Kipp and Hull rights of way are under the jurisdiction of the Ingham County Road Department. The parcel is zoned M-2 General Manufacturing District.

The surrounding land uses and zoning are as follows:

	Current Land Use	**Zoning**	**Future Land Use**
North	Commercial and Undeveloped	C-2 (General Commercial) M-1 (Light Manufacturing)	Mixed Use
East	Jackson and Lansing Railroad Vevay Township	Vevay Township	Vevay Township
South	Industrial and Undeveloped	M-2 (Light Manufacturing)	Industrial
West	Commercial, Residential and Vacant Residential	C-2 (General Commercial) AG (Single Family Agricultural)	Commercial

The expansion on this property is generally consistent with the Master Plan, p.3-2:

COMMENTS – DEPARTMENTS AND AGENCIES

Staff circulated the application and plans to city staff and agencies with jurisdiction over the project. In addition to comments received in 2017, the following were received.

Engineer	See attached email.
Fire	[City Engineer email] captures my concerns about access roads and the hydrant connections. Additionally, will there be any hazardous chemicals or products stored in the addition and are they up to date with the Ingham County P-2 reporting? *THE COUNTY P2 REPORT IS UP TO DATE AND ACCURATE FOR THE ENTIRE FACILITY.*
Police	Add sufficient lighting for safety and security – all entrances and travel/parking areas.
Public Works	See City Engineer comments. *SEE BELOW.*
Building	A preliminary review of the applicable code references including area, occupant load, egress requirements, use and occupancy classification, etc all seem to be correct.
Ingham County Drain Commission	*SESC PERMIT APPLICATION IS UNDER REVIEW AND IS PENDING.*
Ingham County Road Department	
Michigan Department of Transportation	*NO APPLICABLE*
Michigan Department of Environmental Quality	*EGLE PERMIT NO. WRP030048 V1.0 ISSUED ON 8/3/2021*

STAFF REVIEW

Staff finds that the Site Plan does not appear to meet the standards for Final Site Plan Approval. This is based upon a review of the materials submitted which remain consistent with the plans.

§94-227. Standards for site plan review and approval. In reviewing an application for site plan review and approval the following standards shall apply:

STATUS/NOTE	**REQUIREMENT**
M = Appears to meet requirement; D = Does not appear to meet requirement; I = Information Needed; R = Recommendation; W = Waiver Requested; *Italics = Staff comments*	
M	(1) The site shall be developed so that all elements shall be harmoniously and efficiently organized in relation to the size, shape, type and topography of the site and surrounding property.
The site appears to be harmonious and efficiently organized. The new building addition is appropriately scaled with the remainder of the building and along with the new service lane will improve traffic circulation throughout the site. The changes are integrated with the topography and appear to be harmonious with surrounding properties. See parking discussion below.	
M	(2) The site shall be developed so as not to impede the normal and orderly development, improvement, and use of surrounding property for uses permitted in this chapter.
The new addition and service drive does not appear to impact the uses of surrounding property.	
M/I	(3) All buildings or groups of buildings shall be arranged to permit emergency vehicle access by some practical means to all sites.
The service drive extension will improve emergency vehicle access to the building. See City Engineer email regarding construction staging plan for maintaining emergency vehicle access. THE APPLICANT NOTES THAT IT WILL INVITE THE CITY OF MASON FIRE CHIEF TO THE SITE TO REVIEW THE PLACEMENT OF THE	

OUTDOOR STORAGE OF RACKS AND IDENTIFY AREAS WHERE THE RACKS MAY BE STORED SO AS NOT TO INTERFER WITH ACCESS OR THE ABILITY OF FIRE DEPARTMENT TO PERFORM ITS DUTIES SHOULD BE THEY BE NECESSARY.	
M	(4) Every structure or dwelling unit shall have direct access to a public street or indirect access to a public street via an approved dedicated private street.
The site has access on a public street to the north (Kipp) and a private street to the south (Trillium).	
M/I	(5) Appropriate measures shall be taken to ensure that the addition or removal of surface waters will not adversely affect neighboring properties, that controls are in place to minimize sedimentation and erosion, and that topographic alterations are minimized to accommodate storm water management.
The site will be subject to requirements of the Ingham County Drain Commission. A revised Storm Water Maintenance Agreement with the City will be required and storm drains must be sealed as stated per the City Engineer's email. AS WE UNDERSTAND IT, THE STORMWATER MANAGEMENT SYSTEM IS SUBJECT TO THE REQUIREMENTS OF THE CITY OF MASON AS LAYED OUT IN CHAPTER 52 OF THE CITY'S ORDINANCES. ADDITIONALLY, THE SITE'S ON-SITE STORMWATER SYSTEM DISCHARGES INTO SYCAMORE CREEK WHICH IS NOT A COUNTY DRAIN UNDER THE JURISDICTION OF THE INGHAM COUNTY DRAIN COMMISSIONER (ICDC). THAT BEING SAID THE CITY OF MASON'S STORMWATER REQUIREMENTS FOR VOLUME, DISCHARGE RATE AND WATER QUALITY ARE MET BY THE ICDC DESIGN METHODOLOGY USED FOR THE STORMWATER IMPROVEMENTS PROPOSED FOR THIS PROJECT. FINALLY AND WITH RESPECT TO THE SOIL EROSION AND SEDIMENTATION CONTROL (SESC) REQUIREMENTS, THE PLANS FOR THIS PROJECT HAVE BEEN SUBMITTED TO THE ICDC AS THE COUNTY ENFORCING AGENT FOR SESC. WE HAVE NOT YET RECEIVED REVIEW COMMENTS OR APPROVAL. WE WILL FORWARD IT/THEM WHEN RECEIVED.	
M/I	(6) Provisions shall be made for the construction of storm sewer facilities including grading, gutters, piping, on-site storage, and treatment of turf as required to handle stormwater and prevent erosion.
Same as previous. SEE THE RESPONSE TO ITEM 5 ABOVE.	
I	(7) Secondary containment for above ground areas where hazardous substances are stored or used shall be provided as required by the city fire chief.
Additional information regarding hazardous substances is required per the Fire Chief's email. THE APPLICANT NOTES THAT THERE ARE NO ADDITIONAL OR NEW HAZARDOUS SUBSTANCES PROPOSED FOR THE NEW BUILDING ADDITION. THE CURRENT LIST OF THE ONSITE HAZARDOUS SUBSTANCES IN THE EXISTING FACILITY ARE ON FILE WITH THE CITY'S FIRE CHIEF.	
I	(8) Exterior lighting shall be designed and located so that the source of illumination is directed away from adjacent properties, the intensity of lighting is the minimum necessary, and the direction of lighting is downward as much as is possible and appropriate for the project.
Although the project narrative indicates that site lighting will be directed downward and not cause an adverse impact on adjacent sites, it does not provide information regarding the location and intensity of lighting. A photometric plan demonstrating that site lighting be consistent with the lighting requirements listed in Section 94-177(e) of the zoning ordinance is required. Existing lights should be evaluated for compliance as well. Staff has noticed that the source of the lights on the building are visible at night from the roadway. THE ORIGINAL SITE LIGHTING PHOTOMETRIC PLAN FROM THE 1998 CONSTRUCTION HAS BEEN RECENTLY UPDATED FOR THE FACILITY'S UPDATE TO THE SITE LIGHTING. THE UPDATE REPLACED THE EXISTING LAMPS WITH LED LAMPS. THE UPDATE INCLUDED THE EXISTING PARKING LOT LIGHTING AND BUILDING WALPACK LIGHTING. PART OF THE UPDATE INCLUDED THE PLACEMENT OF DOWNWARD SHIELDING TO PREVENT LIGHT FROM SPREADING OFF SITE. THE PHOTOMETRIC PLAN WILL BE INCLUDED IN THE REVISED PLAN SET.	
I	(9) All loading and unloading areas, outside storage areas, and refuse receptacles shall be screened from casual view from the public rights-of-way and adjoining land uses.
There is insufficient detail on the plan to indicate compliance with dimensional requirements of Sec. 94-293	

and 94-173(b). Staff has noticed significant storage of material on the south side of the building which has the potential to impede emergency access to the building. *SEE THE RESPONSE TO ITEM NO. 3 ABOVE.*	
D/R	(10) Site plans shall meet the driveway, traffic safety, and parking standards of the city in such manner as necessary to address the following:
	a. Safe and efficient vehicular and non-vehicular circulation, including parking areas, non-motorized linkages to abutting parcels, uses, sidewalks, and trails.
	b. Shared driveways and service drives.
	c. Adequate and properly located utilities.

PARKING - The site plan indicates that the existing parking lot will adequately handle the parking demand. However, no parking plan is provided that adequately demonstrates parking demand and the existing facility's ability to accommodate demand. Pursuant to Section 94-292(g)(2) the Planning Commission may defer parking space requirements only where the applicant has demonstrated that the required parking standards is excessive. Table 100-5 requires .33 parking spaces for each 100 square feet of usable floor area for industrial facilities and that spaces measure 200 s.f. ea (10x20). After this addition, the facility will achieve 673,980 square feet, and 2,224 parking spaces would be required. It is staff's opinion that the applicant has not adequately demonstrated parking demand and capacity. More information is required prior to approval. *CERTAINLY 2,224 PARKING SPACES IS NOT REPRESENTATIVE OF THE PARKING NEEDS FOR THIS TYPE OF MANUFACTURING FACILITY. THE REVISED PLANS WILL REFLECT THE EXISTING USABLE AREA FOR THIS FACILITY AND THE CALCULATED PARKING IN ACCORDANCE WITH THE ZONING ORDINANCE. THE PLANS WILL ALSO REFLECT THE LOCATION OF ANY BANKED PARKING THAT MAY BE NECESSARY TO FULFILL THE PARKING REQUIREMENTS.*

SIDEWALKS - The City is holding $4,500 which was received from Gestamp after the 2012 expansion (PC Resolution 2011-03) as security for the completion of the sidewalk. As discussed in the City Engineer's email, due to a shallow gas line at the corner, an alternative sidewalk connection is necessary. Staff recommends reviewing previous discussion on this issue and amending the site plan to accommodate the remaining sidewalk, to be installed by Gestamp. Upon completion, Gestamp may grant a sidewalk easement to the City for the purpose of future maintenance, and the City will refund the money being held. *THE REVISED PLANS WILL REFLECT THE ADDITION OF A NEW SIDEWALK FROM THE SITE'S PARKING LOT NORTH TO THE WALK ON THE SOUTH SIDE OF KIPP ROAD. THE PLANS WILL ALSO REFLECT AN ADDITIONAL WALK ACROSS THE NORTHWEST CORNER OF THE SITE, CONNECTING THE HULL ROAD SIDEWALK WITH THE KIPP ROAD SIDEWALK. THESE TWO WALKS WILL PROVIDE AN ADA ACCESSIBLE ROUTE TO AND FROM THE SITE. FINALLY, THESE WALKS WILL PROVIDE FUTURE CONNECTIONS TO TWO FUTURE MIDBLOCK PEDESTRIAN CROSSINGS, ONE ACROSS HULL ROAD TO MEIJER AND ONE ACROSS KIPP ROAD TO CONNECT WITH THE END OF THE HAYHOE TRAIL. THE APPLICANT REGOGNIZES THAT THESE FUTURE CROSSINGS WILL REQUIRE A STUDY AND COORDINATION BETWEEN THE CITY AND THE INGHAM COUNTY ROAD DEPARTMENT.*

TRAFFICE, DRIVEWAYS AND SERVICE DRIVES – The plan proposes a second access point along Trillium Drive. There appears to be no record of a Traffic Study done previously per Sec. 94-176(g) and the traffic information provided is specific to staffing only. Additional traffic information is required which includes all trips generated to/from the site – employees, freight deliveries, etc. *THE APPLICANT IS PROPOSING A SECOND ACCESS POINT ON TRILLIUM DRIVE. THIS SECOND ACCESS IS AT THE CURRENT DRIVE OPENING ON THE WEST END OF TRILLIUM DRIVE AT THE ELECTRICAL SUBSTATION. GESTAMP IS PROPOSING THIS SECOND ACCESS AS A LEFT TURN IN ONLY. THE OTHER ACCESS FARTHER EAST WILL BECOME THE RIGHT TURN OUT ONLY.*

THE APPLICANT HAS COMPILED TRUCK TRAFFIC DATA FOR THE FACILITY. THE TRUCK TRAFFIC COUNTS FOR BOTH THE CURRENT CONDITIONS AND PROPOSED CONDITIONS ARE INCLUDED.

UTILITIES – The plan appears to meet the requirements for utilities. See City Engineer email.	
R	(11) Provisions shall be made for proposed common areas and public features to be reasonably maintained.
See above recommendation for sidewalk easement to City. *SEE THE RESPONSE TO ITEM 10 ABOVE.*	
	(12) The site plan submittal shall demonstrate compliance with all applicable requirements of this chapter, chapters 58 and 74, the building code, and county, state, and federal law.
M	Chapter 94 – Zoning and Chapter 100 – Dimensional Requirements
The plan appears to the meet the building height, setbacks and lot coverage site development standards listed in Section 94-121(c) and Tables 100-1 and 100-2 as noted on the plan sheets. *There is a discrepancy in total square footage of the addition. The application states 49,200 but the footprint on sheet A2.0 shows only 47,500 s.f. This will need to be confirmed prior to approval.*	
M	Sec. 94-172(3) Vision clearance across corner lot.
The proposed plan appears to meet the requirements for vision clearance where the drives intersect with the roads. There appear to be no obstructions caused by landscaping or signage.	
D/R	*Sec. 94-241 Landscape, screening and buffer requirements*
If the applicant submits a request for waivers from the landscaping requirements, the Planning Commission may choose to waive the requirements as requested so long as the intent to provide landscaping within parking areas, and to enhance aesthetic and ecological qualities, character, privacy, and land value is met. The Planning Commission has the option to accept the proposed plan and waive the requirements for the landscaping pursuant to Section 94-241 (e)(6), or require the plan to be revised with the required vegetation. Per Sec. 94-241 the site is required to have: Sec. 94-241(c)8 – 10% of the site area shall be landscaped with grasses and other live groundcovers, planting beds, and trees, or combinations thereof, and the site shall include a minimum of one tree per 10,000 square feet of disturbed land, or fraction thereof… *With the existing vegetation the plan appears to meet this requirement.* *Sec. 94-241(e)(1)* – Buffer on all sides of the property: if the applicant cannot reasonably comply with the buffer zone standards, then the Planning Commission can determine the character of the buffer based upon the standards listed in Sec. 94-241(e)(3). *The site does not appear to meet the buffer requirements, however, the buffers were previously approved as is. The applicant is proposing an increase in plantings in buffers. In addition, the buffer zones are separated by a street. Per Sec. 94-241(e)(6) the Planning Commission has the ability to waive requirements in Sec. 94-241 and specifically in (4) If two zoning districts requiring a buffer zone are separated by a street, the design of the buffer zone shall be determined by the designated site plan approval body.* *THE APPLICANT WILL BE REQUESTING A WAIVER.* Sec. 94-241(i) – Off-street parking landscape development standards require one canopy tree and 100 sq. ft. of landscaped area per eight spaces. Landscaped areas shall be protected by a raised standard or rolled concrete curb. *The applicant has not proposed any landscaping changes to the existing parking area. The parking lot does not meet the landscaping requirements for interior trees and shading, however, this was previously approved and is considered pre-existing with no proposed changes. If parking is to be added, staff recommends adding interior trees.* *NO ADDITIONAL PARKING IS PROPOSED.*	
M	*Chapter 58 - Signs*

No new or expanded freestanding sign is proposed. Any proposed signage will require a separate building permit subject to the requirements of Chapter 58 of the Zoning Ordinance, including Division 2 of said chapter.

§94-226. Final site plan review and approval.
The planning commission shall have the authority to approve, approve with conditions, or deny an application for final site plan review and approval.

§94-229. Extension of site plan approval.
Approvals of a final site plan are valid for a period of 12 months. Only one extension of a final site plan may be granted for an additional 12 months at the sole discretion of the approving authority. A final site plan is deemed to have expired if a building permit has not been obtained for the development within 12 months of approval of the final site plan. A request to extend preliminary or final site plan validity shall be submitted prior to the expiration of the preliminary or final site plan.

§94-230. Conformance to approved site plan.
A development project shall conform to the approved final site plan. Failure to conform to the approved final site plan shall constitute a violation of this chapter.
However, amendments to an approved site plan can be made subject to the provisions of §94-228 Amendments to an approved site plan:

> *Sec. 94-228. Amendments to an approved site plan.*
> *(a) Material change. An approved preliminary site plan may be amended only after review and approval by the original approving authority. The process for review and approval shall be the same as that used for the original approval of the preliminary plan. The applicant shall be responsible for paying any additional costs incurred by the city as a result of a request to amend an approved preliminary site plan.*
> *(b) Administrative approval. An approved final site plan may be administratively amended by the zoning official if it is determined, at the sole discretion of the zoning official, that no material change is proposed, including the location of streets and buildings, the location and amount of open space or off-street parking, the location and type of landscaping material, the number of dwelling units or structures, or any other requirements of this chapter. An amendment which, in the opinion of the zoning official, represents a material change shall be referred to the planning commission for review and approval if the planning commission exercised original approval authority, or may be referred to the planning commission at the sole discretion of the zoning official.*

§94-231. Review standards for planning commission decision.
(a) A decision rejecting, approving, or conditionally approving a site plan shall be based upon requirements and standards contained in the zoning ordinance, other statutorily authorized and properly adopted local unit of government planning documents, other applicable ordinances, and state and federal statutes.

(b) A site plan shall be approved if it contains the information required by the zoning ordinance and is in compliance with the conditions imposed under the zoning ordinance, other statutorily authorized and properly adopted local unit of government planning documents, other applicable ordinances, and state and federal statutes.

The applicant has submitted a Final Site Plan that <u>does not</u> appear to contain the information required by the zoning ordinance, and will not meet the standards for approval of a Final Site Plan review.

Therefore, the following motion is offered for consideration:

MOTION

Motion to continue to (future meeting, time/date certain) to allow the applicant to revise the final site plan for consideration of approval.

Attachments:

~~1. Proposed Resolution 2021-04 –~~ to be revised once compliant site plan is received.

2. Application
3. Link to packet with materials for SUP/SP:

From: Donald Heck
To: Elizabeth Hude
Cc: Michael Olson
Subject: Gestamp 2021 Expansion
Date: Tuesday, July 27, 2021 10:31:48 AM
Attachments: image003.png

Ms. Hude:

Pursuant to the City of Mason Zoning Ordinance (Chapter 94 of the Code of Ordinances) and in particular, Section 94-2 and Section 94-226 (c), we have reviewed the plans for the Gestamp 2021 expansion as prepared by LSG Engineers and Surveyors dated July 2, 2021.

Through the course of review we have the following questions and/or comments:

SEE STAFF REPORT RESPONSES.

1. The sidewalk connection from the parking lot to Hull Road consists of a set of steps to transverse the slope between Gestamp's parking lot and Hull Road. It is recommended that this connection be reviewed in an effort to meet ADA requirements.

SEE STAFF REPORT RESPONSES.

2. During previous expansions, the sidewalks along Kipp Road and Hull Road have been constructed but due to shallow gas utilities at the corner, the sidewalks have not been connected. In an effort to complete this sidewalk connectivity and pursuant to Section 94-2(6) it is recommended that Gestamp and the City of Mason coordinate for the construction of this sidewalk in an easement that traverses the Gestamp property.

A CONSTRUCTION STAGING PLAN WILL BE INCLUDED IN THE REVISED PLANSET.

3. Pursuant to vehicle access during construction (particularly emergency vehicle access) it is recommended that a construction staging plan be provided. This plan should clearly indicate the drive lanes in and around the building including how access to the structure will be maintained during construction.

SEE STAFF REPORT RESPONSES.

4. Pursuant to the requirements of Section 94-2(8) the City of Mason requests a list of the materials stored on-site, specifically what is being stored under the proposed canopy area.

ACKNOWLEDGED.

5. The fire hydrant, as shown on Plan Sheet C6.1, shall be revised to note the hydrant shall be EJ Model 5BR with two (2) 5-inch Storz connections. Hydrants shall be painted yellow.

ACKNOWLEDGED.

6. The plans should also note the valves on the 10-inch water main shall be EJ Flow Master resilient seat gate valves.

ACKNOWLEDGED.

7. Pursuant to Section 85-152 of the Code of Ordinances, any storm drain that will be within the footprint of the building expansion shall be sealed in such a manner as to prevent the discharge of any untreated waste into the storm system and ultimately into waters of the State. Any floor drains with the building shall be connected to the sanitary sewer system.

ACKNOWLEDGED.

8. A drain maintenance agreement that encompasses all of the on-site storm water collection and detention basins shall be executed upon completion of this expansion.

We appreciate the opportunity to provide these comments to the City of Mason.

As always if you have any questions or require additional information, please do not hesitate to call.

Sincerely,

Donald B. Heck, PE
Wolverine Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854-1169
Ph: 517.676.9200 Fx: 517.676.9396
donh@wolveng.com http://www.wolveng.com

GESTAMP
200 E. Kipp Road
Mason, MI

COMPILED AND PROJECTED
DAILY TRUCK TRAFFIC COUNTS

CURRENT DAILY COUNTS						
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
Kipp Rd. Entrance						
4:00AM to 8:30AM	2	2	2	2	2	1
8:30AM to 1:00PM	2	2	2	2	2	
1:00PM to 6:00PM	3	3	3	3	3	1
Kipp Rd. Daily Totals	**7**	**7**	**7**	**7**	**7**	**2**
Trillium St. Entrance						
Midnight to 4:00AM	18	18	18	16	18	16
4:00AM to 8:30AM	32	32	32	29	31	24
8:30AM to 1:00PM	37	38	38	38	37	24
2:00PM to 6:00PM	25	25	32	25	32	17
6:00PM to Midnight	17	17	18	16	17	16
Other					2	
Trillium St. Daily Totals	**129**	**130**	**138**	**124**	**137**	**97**
Current Grand Total	**136**	**137**	**145**	**131**	**144**	**99**
PROJECTED DAILY COUNTS						
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
Kipp Rd. Entrance						
4:00AM to 8:30AM	2	2	2	2	2	1
8:30AM to 1:00PM	2	2	2	2	2	
1:00PM to 6:00PM	3	3	3	3	3	1
Kipp Rd. Daily Totals	**7**	**7**	**7**	**7**	**7**	**2**
Trillium St. Entrance						
Midnight to 4:00AM	24	25	25	22	26	22
4:00AM to 8:30AM	42	41	42	40	41	35
8:30AM to 1:00PM	48	49	49	49	47	35
2:00PM to 6:00PM	33	34	40	33	39	25
6:00PM to Midnight	22	21	22	20	22	20
Other					2	
Trillium St. Daily Totals	**169**	**170**	**178**	**164**	**177**	**137**
Projected Grand Total June 2022	**176**	**177**	**185**	**171**	**184**	**139**
Note: The counts shown are round trips. Each count includes one in and one out.						

PLANS FOR CONSTRUCTION OF
GESTAMP
2021 EXPANSION

200 EAST KIPP ROAD
MASON, MICHIGAN 48854

DATE	DESCRIPTION	BY
7/2/21	FOR SITE PLAN RREVIEW AND PERMITS	SEP
06/16/21	60% SET	AJI

REVISIONS/SUBMITTALS

NOTES

GENERAL

1. BENCHMARKS

   #1. Northwest flange bolt on fire hydrant, 204'± North and 93'± West of the Northeast corner of building. Elevation: 908.84 (NAVD 88)

   #2. Northwest flange bolt on fire hydrant, 81'± West and 66'± South of the Northeast corner of building. Elevation: 915.75 (NAVD 88)

   #3. Northwest flange bolt on fire hydrant, 88'± West and 494'± South of the Northeast corner of building. Elevation: 912.53 (NAVD 88)

2. The contractor shall call "MISS DIG" at 1–800–482–7171 at least 3 working days (excluding weekends and holidays) prior to construction.
3. All work shall be done in accordance with the applicable codes, ordinances, design standards and standard specifications of the following agencies which have the responsibility of reviewing plans and specifications for construction of all items included in these plans:
   a. City of Mason
   b. Ingham County
   c. State of Michigan
4. The contractor shall apply for and obtain all necessary permits as required for construction of this project prior to the beginning of work from the previously mentioned agencies.
5. The contractor shall notify the City of Mason a minimum of 24 hours prior to any construction in the road right–of–way of Kipp Road and Hull Road.
6. The contractor agrees that in accordance with generally accepted construction practices, the contractor will be required to assume sole responsibility for job site conditions during the course of construction of the project, including the safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours.
7. The locations and dimensions shown on the plans for existing facilities are in accordance with all available information. The engineer does not guarantee the accuracy of this information or that all existing underground facilities are shown.
8. When any existing utility requires adjustment or relocation, the contractor shall notify the proper utility company and coordinate the work accordingly. There shall be no claim made by the contractor for any costs caused by delays in construction due to the adjustment or relocation of utilities.
9. The contractor is to verify that the plans and specifications that he/she is building from are the very latest plans and specifications that have been approved by all applicable permit–issuing agencies and the owner. All items constructed by the contractor prior to receiving the final approval and permits having to be adjusted or re–done, shall be done at the contractor's expense.
10. Should the contractor encounter conflict between these plans and specifications, either among themselves or with the requirements of any and all reviewing and permit–issuing agencies, he/she shall seek clarification in writing from this engineer before commencement of construction. Failure to do so shall be at the sole expense to the contractor.
11. Unless otherwise noted the contractor shall furnish as–built drawings indicating all changes and deviations from approved drawings.
12. All signs and traffic control measures during construction and maintenance activities shall be constructed and installed per the latest edition of the Michigan Manual of Uniform Traffic Control Devices (M.M.U.T.C.D.).
13. LSG Engineers & Surveyors will not be responsible for field design changes made by the contractor or the contractor's surveyor where LSG Engineers & Surveyors has not approved these design changes.

GRADING AND SITE WORK

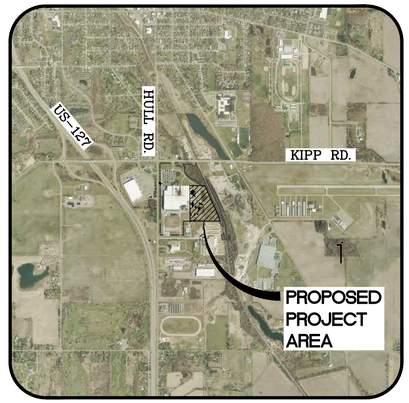
1. Prior to grading, cutting and filling the contractor shall remove all topsoil, debris, vegetation, etc. from the site. Acceptable material excavated from the cut areas shall be used for fill. Fill shall be placed in layers not exceeding depths of 12 inches and shall be compacted to 95% of its maximum unit weight.
2. The contractor shall proof–roll the existing subgrade to determine its suitability. If, in the opinion of the engineer, the subgrade is unsuitable that portion of the subgrade shall be excavated and replaced with a minimum of 12" M.D.O.T. Class II granular material.
3. All site grading must be performed to insure positive drainage across the entire site, throughout the period of construction and after project completion.
4. All sedimentation and soil erosion control measures shall be constructed prior to the commencement of site grading and must conform to Part 91 of Act 451 of the Public Acts of 1994 as amended. All applicable permits shall be obtained before implementing these measures. The contractor shall be responsible for maintaining the sedimentation and soil erosion control measures throughout construction.

STORM DRAINAGE SYSTEM

1. Unless otherwise noted all storm drain pipe shall be ASTM C–76 Class III or better, with premium joints. All storm drain with less than 3 feet of cover below paved areas shall be ASTM C–76 Class IV, with premium joints.
2. All storm drain service leads shall be 4" minimum Schedule 40 or SDR–35 unless otherwise noted on these plans.
3. All storm drain manholes and catch basins shall conform to the City of Mason Standard Details or the details included in these plans.
4. All storm drain below paved areas shall be backfilled with 100% granular material (or approved other) and compacted to 95% of its maximum unit weight (see typical trench details included in these plans).
5. All frames and covers on drainage structures shall be non–rocking, made of heavy duty cast iron and shall conform to the casting schedule on sheet C6.2.
6. All rim elevations in outlawn areas are approximate only and shall be adjusted by the contractor after final grades are established.
7. See storm drain details on sheet C6.2.

WATER (FIRE) MAIN SYSTEM

1. All water (fire) main shall be DI CL52 unless otherwise noted on these plans.
2. All construction of the water main service system shall conform to the water main construction plans and specifications approved by the City of Mason.
3. All water main shall be installed with a minimum of 5.5 feet of cover from finished grades.
4. A full length of water main pipe shall be centered from the point of crossings of all sewers with a minimum vertical clearance of 1.5 feet. In the event a clearance of less than 1.5 feet is constructed, the intersection shall be encased in concrete.
5. All elevations in outlawn areas are approximate only and shall be adjusted by the contractor after finish grades are established.
6. All water main within a 45° zone of influence of paved areas shall be backfilled with 100% granular material (or approved other) and compacted to 95% of its maximum unit weight (see typical trench details included in these plans).
7. All water main shall have a minimum 10' horizontal separation from any storm or sanitary sewer.
8. All ductile iron water main pipe, fittings, and valves are to be encased within 8–mil thick polyethylene wrap.
9. Water main and fittings shall be installed with restrained joints.
10. See water main details on sheet C6.1.



LOCATION MAP

SCALE: 1"=2000'

LEGEND

(E) SPOT ELEVATION	100.00	(P) SPOT ELEVATION	850.00 / 850.00
(E) 1' CONTOURS	851	(P) 1' CONTOUR	851
(E) 5' CONTOURS	850	(P) 5' CONTOUR	850
(E) GAS LINE	G	(P) GAS LINE	G
(E) TELEPHONE LINE	T	(P) TELEPHONE LINE	T
(E) ELECTRIC LINE	E	(P) ELECTRIC LINE	E
(E) STORM DRAIN	STM	(P) STORM DRAIN	
(E) SANITARY SEWER	SAN	(P) SANITARY SEWER	
(E) WATER MAIN	W	(P) WATER MAIN	
(E) CHAIN LINK FENCE	X	(P) CHAIN LINK FENCE	X
(E) WOOD FENCE		(P) WOOD FENCE	
(E) WATER WELL	W	(P) GUARD RAIL	
(E) FIRE HYDRANT		(P) FIRE HYDRANT ASSEMBLY	
(E) WATER VALVE	V	(P) WATER MAIN VALVE	
(E) SANITARY MANHOLE	S	(P) WATER MAIN BEND	
(E) STORM MANHOLE	D	(P) WATER MAIN REDUCER	
(E) CATCHBASIN		(P) CURB INLET	
(E) CULVERT	12" C.M.P.	(P) CATCH BASIN	
(E) LIGHT POLE		(P) TRENCH DRAIN	
(E) UTILITY POLE		(P) FLARED END SECTION	
(E) SIGN		(P) MANHOLE	
(E) MAILBOX		(P) LIGHT POLE	
(E) CONIFEROUS TREE		(P) SANITARY SEWER CLEANOUT	C.O.
(E) DECIDUOUS TREE		(P) UTILITY CROSSING	
(P) SIDE SLOPE	3:1	(P) BUILDING WALLPACK	
(P) DRAINAGE SWALE		(P) SIGN	
(P) DRAINAGE FLOW ARROW		(P) PARKING COUNT	12
(P) RIP RAP		(P) HANDICAP PARKING	
LOW POINT	L.P.	(P) HANDICAP VAN ACCESSIBLE	VAN
HIGH POINT	H.P.	(P) TRAFFIC FLOW	
FINISH FLOOR	F.F.	SOIL BORING	
BENCHMARK	BM.	(P) MODIFIED CURB & GUTTER	
WATER SURFACE	W.S.	(P) REGULAR CURB & GUTTER	
GRADE BREAK	G.B.	(P) SCREEN WALL OR RETAINING WALL	
(P) HEAVY DUTY ASPHALT AREA			
(P) LIGHT DUTY ASPHALT AREA			
(P) CONCRETE SURFACE			
(P) AGGREGATE SURFACE			
(P) DRAINAGE BASIN BOUNDARY			
(P) BASIN DESIGNATION	E–1a		
(P) BASIN AREA IN ACRES	2.52		

NOTE:
(E) – INDICATES EXISTING
(P) – INDICATES PROPOSED

INDEX

PREPARED FOR:
Gestamp
200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE: (517) 244–8800

PREPARED FOR:
WEILAND
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE: (517) 372–8650

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393–2902
FAX (517) 393–2608
www.lsg–es.com

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
No. 32017
REGISTERED PROFESSIONAL ENGINEER

DATE MAY 24, 2021
PROJECT NO. 2679
SHEET NO. C

LEGAL DESCRIPTION:

PART OF THE NW 1/4 OF SECTION 16, T2N, R1W, VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF SAID SECTION 16; ALONG THE NORTH SECTION LINE IN KIPP ROAD (100 FEET ROW), THENCE S89°45'58"E 1033.64 FEET TO THE WESTERLY LINE OF THE CONRAIL RAILROAD R.O.W., THENCE S24°17'28"E, 1459.66 FEET TO A POINT OF CURVATURE; THENCE CONTINUING SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT 408.57 FEET (RADIUS=2861.25 FEET, DELTA=8°10'53", CHORD BEARING S20°12'01"E, 408.22 FEET) THENCE N89°43'34"W, 820.40 FEET; THENCE S00°06'19"W, 31.32 FEET, THENCE N89°43'34"W, 197.00 FEET; THENCE S00°06'19"W, 386.00 FEET; THENCE ALONG THE NORTH RIGHT OF WAY LINE OF TRILLIUM COURT (66 FEET R.O.W.) N89°53'41"W, 754.03 FEET TO THE WEST SECTION LINE IN HULL ROAD, (100 FEET R.O.W.) THENCE ALONG SAID SECTION LINE N00°34'38"W, 2128.84 FEET TO THE NW SECTION CORNER AND THE P.O.B.

PARCEL B
PART OF NW 1/4 OF SECTION 16, T2N, R1W, VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN, BEING MORE PARTIALLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF SAID SECTION 16; ALONG THE NORTH SECTION LINE IN KIPP ROAD (100 FEET ROW), THENCE S89°45'58"E, 1033.64 FEET TO THE WESTERLY LINE OF THE CONRAIL RAILROAD ROW, THENCE S24°17'28"E, 1459.66 FEET TO A POINT OF CURVATURE; THENCE CONTINUING SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT 408.57 FEET (RADIUS = 2861.25 FEET, DELTA = 8°10'53", CHORD BEARING S20°12'01"E, 408.22 FEET) TO THE POB, THENCE CONTINUING ALONG THE WESTERLY LINE OF THE CONRAIL ROW ALONG THE ARC OF A CURVE TO THE RIGHT 281.39 FEET (RADIUS = 2861.25 FEET, DELTA = 5°38'05", CHORD BEARING S13°17'32"E, 281.28 FEET); THENCE ALONG A CURVE TO THE LEFT 468.82 FEET (RADIUS = 429.28 FEET, DELTA = 62°34'21", CHORD BEARING N51°54'02"W, 445.86 FEET); THENCE S89°43'34"E 286.20 FEET TO THE P.O.B.

SITE AREAS:

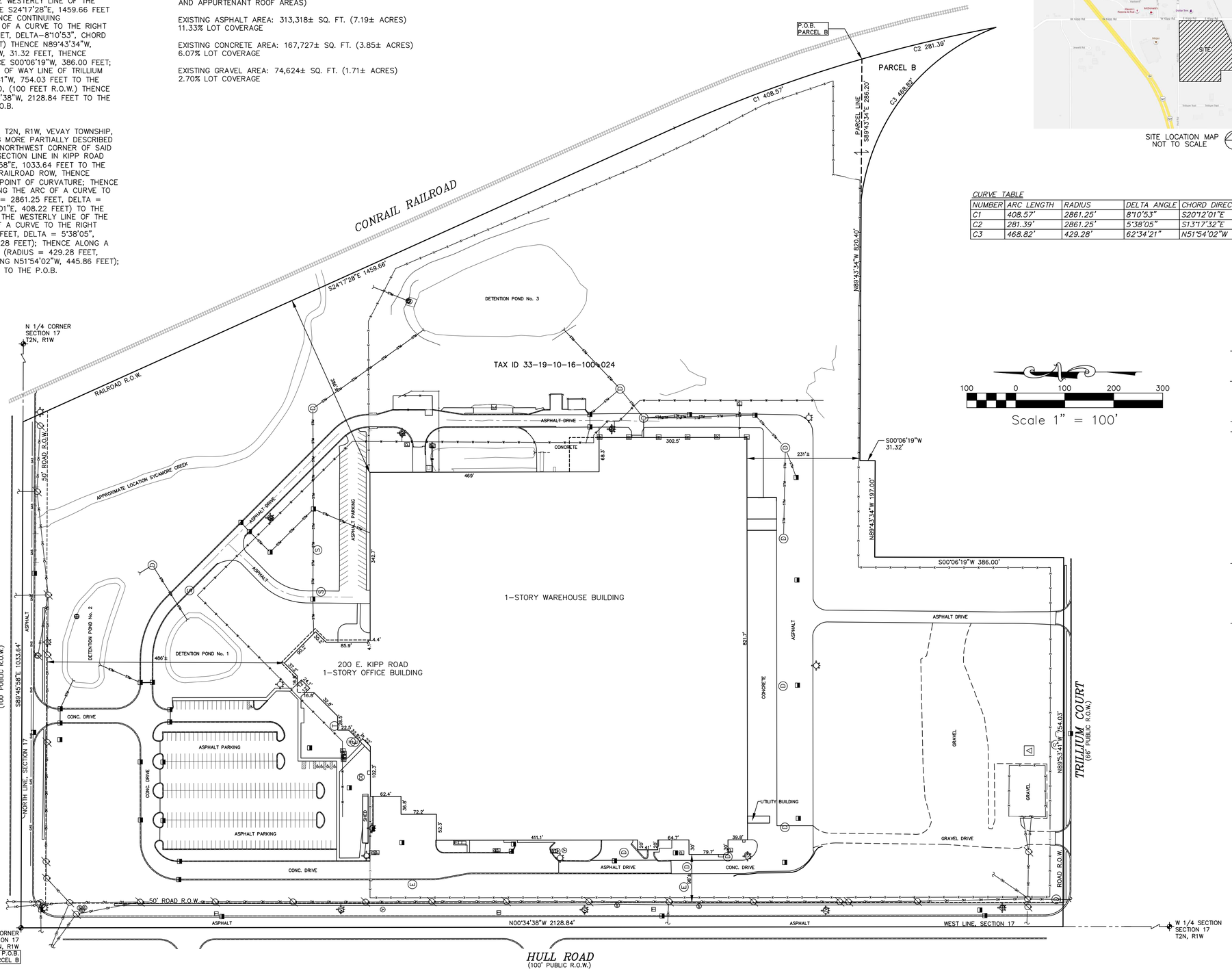
OVERALL PROPERTY AREA: 2,765,216± SQ. FT. (63.48± ACRES)
(INCLUDES ROAD R.O.W.)

EXISTING STRUCTURE AREA: 617,980± SQ. FT. (14.19± ACRES)
22.35% LOT COVERAGE (624,780 SQ. FT. INCLUDING CANOPIES AND APPURTENANT ROOF AREAS)

EXISTING ASPHALT AREA: 313,318± SQ. FT. (7.19± ACRES)
11.33% LOT COVERAGE

EXISTING CONCRETE AREA: 167,727± SQ. FT. (3.85± ACRES)
6.07% LOT COVERAGE

EXISTING GRAVEL AREA: 74,624± SQ. FT. (1.71± ACRES)
2.70% LOT COVERAGE



SITE LOCATION MAP
NOT TO SCALE

CURVE TABLE

NUMBER	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD DIRECTION	CHORD LENGTH
C1	408.57'	2861.25'	8°10'53"	S20°12'01"E	408.22'
C2	281.39'	2861.25'	5°38'05"	S13°17'32"E	281.28'
C3	468.82'	429.28'	62°34'21"	N51°54'02"W	445.86'

Scale 1" = 100'

LEGEND:

- (D) = STORM MANHOLE
- = CATCHBASIN
- STM = STORM LINE
- (S) = SANITARY MANHOLE
- (CO) = SANITARY CLEANOUT
- SAN = SANITARY LINE
- (E) = ELECTRIC MANHOLE
- = UTILITY POLE
- = GUY WIRE
- OH = OVERHEAD UTILITY LINE
- UG = UNDERGROUND UTILITY LINE
- = TRANSFORMER
- AC = AC-UNIT
- (T) = TELEPHONE MANHOLE
- = ROOF DRAIN
- = TELEPHONE PEDESTAL
- = ELECTRIC PEDESTAL
- = ELECTRIC METER
- = LIGHT POLE
- = SIGN
- = MONUMENT SIGN
- (W) = WATER MANHOLE
- (W) = WELL
- W = WATER LINE
- (V) = WATER VALVE
- = FIRE HYDRANT
- (M) = MONITORING WELL
- = GAS METER
- (GV) = GAS VALVE
- = GAS LINE
- = FENCE LINE
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = CURB AND GUTTER
- = TREE LINE
- = SET IRON & CAP #47969
- = FOUND IRON AS NOTED
- = SECTION CORNER
- = DISTANCE NOT TO SCALE
- = YARDBASIN
- P = POST INDICATOR VALVE
- W = WALL HYDRANT
- = MAIL BOX
- = ASPHALT
- = CONCRETE
- = GRAVEL
- (R) = RECORDED
- (M) = MEASURED

BY	DESCRIPTION	DATE
AJ	60% SET	06/16/21
SEP	FOR SITE PLAN REVIEW AND PERMITS	7/2/21

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors
STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
No. 32017
LICENSED PROFESSIONAL ENGINEER
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
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LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

AS-BUILT SITE SURVEY - EXISTING CONDITIONS OF GESTAMP 2021 EXPANSION

200 E. KIPP ROAD
MASON, MICHIGAN 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C1-0.dwg
FIELD WORK	JZ/JS
DRAWN BY	JML
CHECKED BY	DKR
DATE OF SURVEY	9/26/2019
SCALE	
HOR.	1" = 100'
VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C1.0

FILE: I:\2679 (WB GESTAMP MASON 2021)\CV6 PLANS\C1-0.DWG -- PLOT DATE: 7/2/2021 3:54 PM BY: Shannon Pugh SCALE: 1:1

LEGAL DESCRIPTION:

PART OF THE NW 1/4 OF SECTION 16, T2N, R1W, VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF SAID SECTION 16; ALONG THE NORTH SECTION LINE IN KIPP ROAD (100 FEET ROW), THENCE S89°45'58"E 1033.64 FEET TO THE WESTERLY LINE OF THE CONRAIL RAILROAD R.O.W., THENCE S24°17'28"E, 1459.66 FEET TO A POINT OF CURVATURE; THENCE CONTINUING SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT 408.57 FEET (RADIUS=2861.25 FEET, DELTA=8°10'53", CHORD BEARING S20°12'01"E, 408.22 FEET) THENCE N89°43'34"W, 820.40 FEET; THENCE S00°06'19"W, 31.32 FEET, THENCE N89°43'34"W, 197.00 FEET; THENCE S00°06'19"W, 386.00 FEET; THENCE ALONG THE NORTH RIGHT OF WAY LINE OF TRILLIUM COURT (66 FEET R.O.W.) N89°53'41"W, 754.03 FEET TO THE WEST SECTION LINE IN HULL ROAD, (100 FEET R.O.W.) THENCE ALONG SAID SECTION LINE N00°34'38"W, 2128.84 FEET TO THE NW SECTION CORNER AND THE P.O.B.

PARCEL B
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GENERAL NOTES:

1) A current Title Commitment and Schedule B Section II Supportive Documentation has not been furnished. The affect of easements upon this parcel, other than indicated, are unknown.

2) By graphic plotting only, this property is in Zone(s) X & AE of the Flood Insurance Rate Map, Community Panel No. 26065C0254D, which bears an effective date of 8/16/2011 and is partially located in a Special Flood Hazard Area.

3) A certified boundary survey has not been performed by this office. The relationship of features to the parcel boundaries are approximate.

4) Bearings are based upon the North line of Section 16 as S89°45'58"E per the description of record.

5) Base drawing information obtained from LSG Project No. 2387. This survey is an update of the Topographic information at the Southeast corner of the existing building, only.

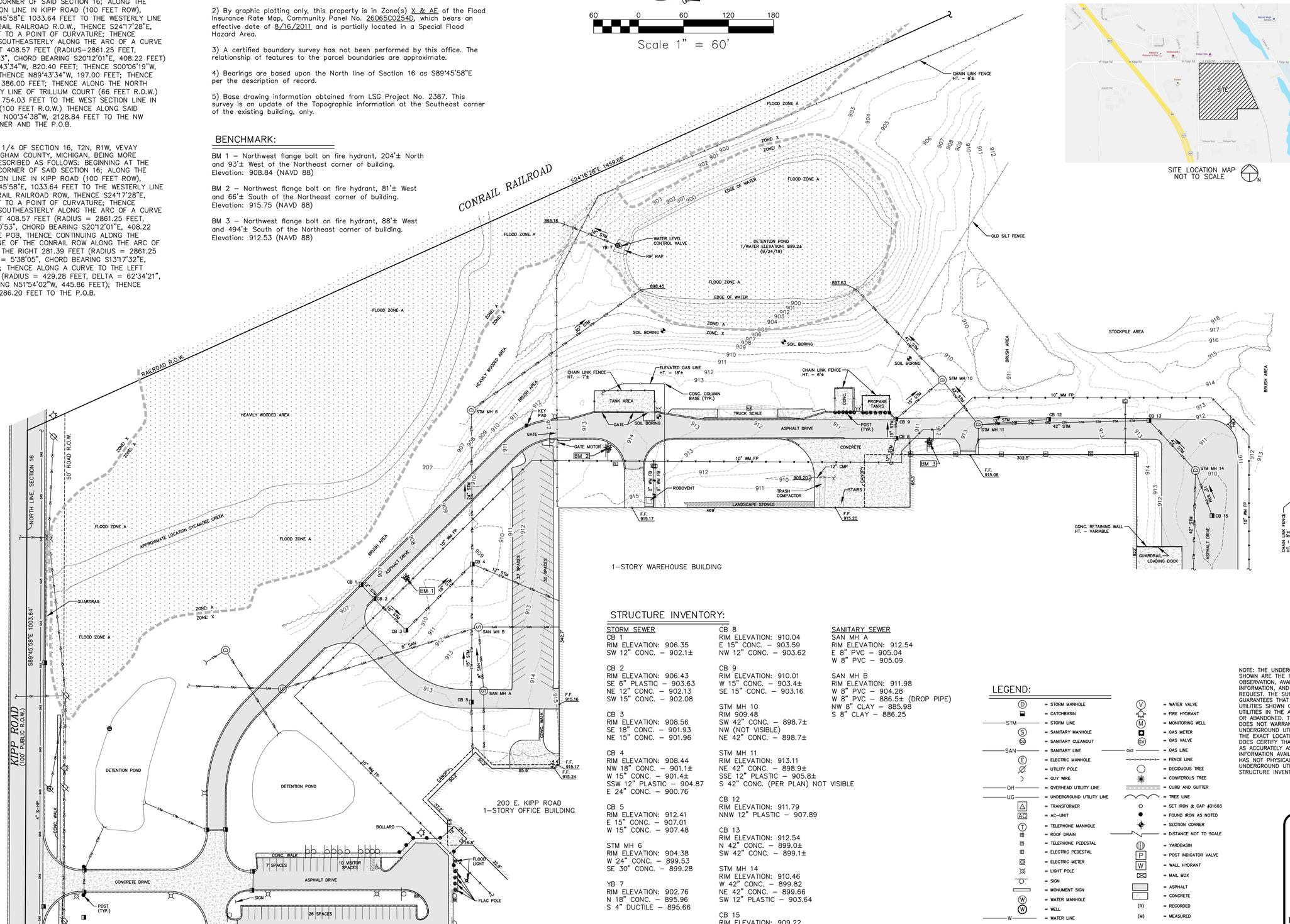
BENCHMARK:

BM 1 – Northwest flange bolt on fire hydrant, 204'± North and 93'± West of the Northeast corner of building.
Elevation: 908.84 (NAVD 88)

BM 2 – Northwest flange bolt on fire hydrant, 81'± West and 66'± South of the Northeast corner of building.
Elevation: 915.75 (NAVD 88)

BM 3 – Northwest flange bolt on fire hydrant, 88'± West and 494'± South of the Northeast corner of building.
Elevation: 912.53 (NAVD 88)

60 0 60 120 180
Scale 1" = 60'



SITE LOCATION MAP
NOT TO SCALE

STRUCTURE INVENTORY:

STORM SEWER

CB 1
RIM ELEVATION: 906.35
SW 12" CONC. – 902.1±

CB 2
RIM ELEVATION: 906.43
SE 6" PLASTIC – 903.63
NE 12" CONC. – 902.13
SW 15" CONC. – 902.08

CB 3
RIM ELEVATION: 908.56
SE 18" CONC. – 901.93
NE 15" CONC. – 901.96

CB 4
RIM ELEVATION: 908.44
NW 18" CONC. – 901.1±
W 15" CONC. – 901.4±
SSW 12" PLASTIC – 904.87
E 24" CONC. – 900.76

CB 5
RIM ELEVATION: 912.41
E 15" CONC. – 907.01
W 15" CONC. – 907.48

STM MH 6
RIM ELEVATION: 904.38
W 24" CONC. – 899.53
SE 30" CONC. – 899.28

YB 7
RIM ELEVATION: 902.76
N 18" CONC. – 895.96
S 4" DUCTILE – 895.66

CB 8
RIM ELEVATION: 910.04
E 15" CONC. – 903.59
NW 12" CONC. – 903.62

CB 9
RIM ELEVATION: 910.01
W 15" CONC. – 903.4±
SE 15" CONC. – 903.16

STM MH 10
RIM 909.48
SW 42" CONC. – 898.7±
NW (NOT VISIBLE)
NE 42" CONC. – 898.7±

STM MH 11
RIM ELEVATION: 913.11
NE 42" CONC. – 898.9±
SSE 12" PLASTIC – 905.8±
S 42" CONC. (PER PLAN) NOT VISIBLE

CB 12
RIM ELEVATION: 911.79
NNW 12" PLASTIC – 907.89

CB 13
RIM ELEVATION: 912.54
N 42" CONC. – 899.0±
SW 42" CONC. – 899.1±

STM MH 14
RIM ELEVATION: 910.46
W 42" CONC. – 899.82
NE 42" CONC. – 899.66
SW 12" PLASTIC – 903.64

CB 15
RIM ELEVATION: 909.22
NE 12" PLASTIC – 905.08

SANITARY SEWER

SAN MH A
RIM ELEVATION: 912.54
E 8" PVC – 905.04
W 8" PVC – 905.09

SAN MH B
RIM ELEVATION: 911.98
W 8" PVC – 904.28
W 8" PVC – 886.5± (DROP PIPE)
NW 8" CLAY – 885.98
S 8" CLAY – 886.25

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- = GAS METER
- (GV) = GAS VALVE
- GAS = GAS LINE
- = FENCE LINE
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = CURB AND GUTTER
- = TREE LINE
- = SET IRON & CAP #31603
- = FOUND IRON AS NOTED
- = SECTION CORNER
- = DISTANCE NOT TO SCALE
- = YARDBASIN
- (P) = POST INDICATOR VALVE
- (W) = WALL HYDRANT
- = MAIL BOX
- = ASPHALT
- = CONCRETE
- (R) = RECORDED
- (M) = MEASURED

NOTE: THE UNDERGROUND UTILITIES SHOWN ARE THE RESULT OF FIELD OBSERVATION, AVAILABLE PLAN INFORMATION, AND AN 811 DESIGN TICKET REQUEST. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN ANY STRUCTURE INVENTORY SHOWN HEREON.

MISS DIG 811
Know what's below. Call before you dig.

BY	DESCRIPTION	DATE
AJI	60% SET	06/16/21

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
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FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:
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PHONE # (517) 244-8800

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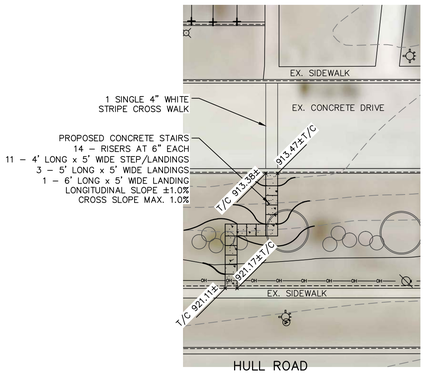
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

TOPOGRAPHIC SURVEY
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

FILE	C1-1.dwg
FIELD WORK	JZ
DRAWN BY	JML
CHECKED BY	DKR
DATE OF SURVEY	6/8/2021
SCALE	
HOR.	1" = 60'
VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C1.1



DETAIL

SCALE: 1" = 30'

100 0 100 200 300

Scale 1" = 100'

GESTAMP MASON

SITE DATA

Item		Required	Existing	Proposed
Min Lot Size		60,000 sf	59.40 Ac* (2,587,450± sf)	59.40 Ac* (2,587,450± sf)
Min. Lot Width		200	1,033±	1,033±
Min. Lot Area per Prin. Struct.		-	N/A	N/A
Front Yard Setback (Kipp Rd) North		60	486	486
Setback (Hull Rd Side) West		20	98	98
Setback (Trillium Rd. Back) South		20	262	231
Setback (RR side) East		20	385	385
Max. Lot Coverage by Structures		50%	24.1% (Bldg 624,780 sf)	26.0% (Bldg 673,980 sf)
Max. Height Principal Structure		45	42	42
Max. Height Accessory Structure		45	N/A	N/A
Min. Floor Area per DU		-	N/A	N.A
Min. Width Principal Structure		-	N/A	N/A
Min. Internal Height Principal Structure		-	N/A	N/A
Landscaping Buffers	**Buffer Length****			
M2 to M1 Buffer B (Kipp Rd) (Min. 10' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	425 (screen)	15 trees 43 shrubs	Natural buffer across the floodplain of Sycamore Creek	Natural buffer across the floodplain of Sycamore Creek
M2 to C2 Buffer C (Kipp Rd) (Min. 30' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	565 (screen)	19 trees 113 shrubs	8 trees+ 92 shrubs+	8 Exist + 8 Prop = 16 92 Existing
M2 to C2 Buffer C (Hull Rd) (Min. 30' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	985 (berm)	33 trees 99 shrubs	16 trees+ 134 shrubs+	16 Existing 134 Exist + 3 Prop = 137
M2 to AG Buffer D (Hull Rd) (Min. 50' wide, 1 tree per 20 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	1065 (berm)	54 trees 107 shrubs	15 trees+ 106 shrubs+	15 Exist 106 Exist
M2 to M1 Buffer B (Trillium) (Min. 10' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	2095 (berm)	70 trees 210 shrubs	40 trees+ 226 shrubs+	40 Exist 226 Exist
M2 to AG Buffer D (RR to east) (Min. 50' wide, 1 tree per 20 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	1790 (screen)	90 trees 358 shrubs	Natural buffer of undeveloped land, the railroad and Sycamore Creek between the land uses	Natural buffer of undeveloped land, the railroad and Sycamore Creek between the land uses
Landscaping Interior (1 canopy tree and 100 sf landscape area per 8 spaces with ½ of trees in the interior)		41 trees 4137 sf	5 trees+ 15,140 sf	5 Exist + 17 Prop = 22 15,140 sf
Parking (0.33 per 100 sf UFA)		Approx. 100,000 sf UFA (office + manufacturing floor)	331	331
Loading/Unloading (1 per 20,000 sf)		31 spaces	11 (estimated)	11 Exist (est) + 6 Prop = 17

Footnotes:
* Parcel acreage less the road right-of-way.
**Buffer length measurements made from Ingham County Parcel Viewer.
+ Existing tree and shrub counts were made on the ground. Volunteer plants and dead plants were not counted.
Proposed landscaping is intended to fill voids within the existing landscaping screens previously approved by the City of Mason.
Lot coverage percentage taken from plans by ENG for the existing condition and the LSG Site Plan for the proposed condition.
Setback measurements made from the Site Plan drawing by LSG.

Compiled by LSG Engineers & Surveyors for SPR and SLU review purposes.

SITE PLAN AND SPECIAL LAND USE NOTES:

Traffic Impact:

1. Public street access has been provided for in earlier development of this project. This access is still viable and no changes are proposed.
2. Emergency vehicle access has been accommodated via site layout and design.
3. Driveway, traffic safety, and parking standards have been addressed and are adequate for this proposed expansion. No increase in employee or truck traffic is anticipated.

Site Lighting:

1. Existing exterior lighting has been provided as part of previous developments and, where applicable, is shown on the plans. Existing site lighting in the area of the proposed building expansion will be relocated along the relocated ring road.
2. Proposed lighting for the building addition is noted on the architectural drawings.
3. The existing lighting will be evaluated to assure that it is functioning in a manner that all lighting will be downward facing and shielded to prevent light pollution onto adjacent properties

Environmental Impact:

1. Natural features of the subject property and surrounding properties will not be negatively impacted. Specifically the floodplain along Sycamore Creek in the northeast corner of the property will not be disturbed and will remain as a screen buffer.
2. Existing and proposed landscape information is indicated in the plans. See Sheet L1.0. The existing landscape screening (as previously approved) is mature and screens the facility. Supplemental landscaping is shown to replace dead or missing plantings and/or enhance the existing screen and parking lot area.

Pedestrian Access:

1. Employees currently access surrounding businesses (Meijer Thrifty Acres, etc.) by walking up the embankment to Hull Road. The City has indicated the need for a pedestrian approach to Hull Road that will connect to the existing sidewalk and possible future midblock crosswalk. This plan proposes a series of stair step/landings across the embankment to provide the pedestrian access. This access will also provide a connection to the CATA bus stop on the Meijer property.

CATA:

1. CATA provides service to the facility in two ways. There is an existing bus stop at the Meijer property across Hull Road. This stop is on Route 46-Mason LTD.
2. CATA also services the facility directly with its Spec-Tran Small Bus service for persons with disabilities.

Construction Phasing:

1. Construction phases are proposed. The initial phase is the construction of the ring road relocation to move on-site truck traffic away from the proposed building construction area. The second phase includes the building erection and construction.

REVISIONS/SUBMITTALS	DATE	DESCRIPTION	BY
	7/12/21	FOR SITE PLAN REVIEW AND PERMITS	SEP
	06/16/21	60% SET	AJI

LSG Engineers & Surveyors
STATE OF MICHIGAN
ALAN D. BOYER
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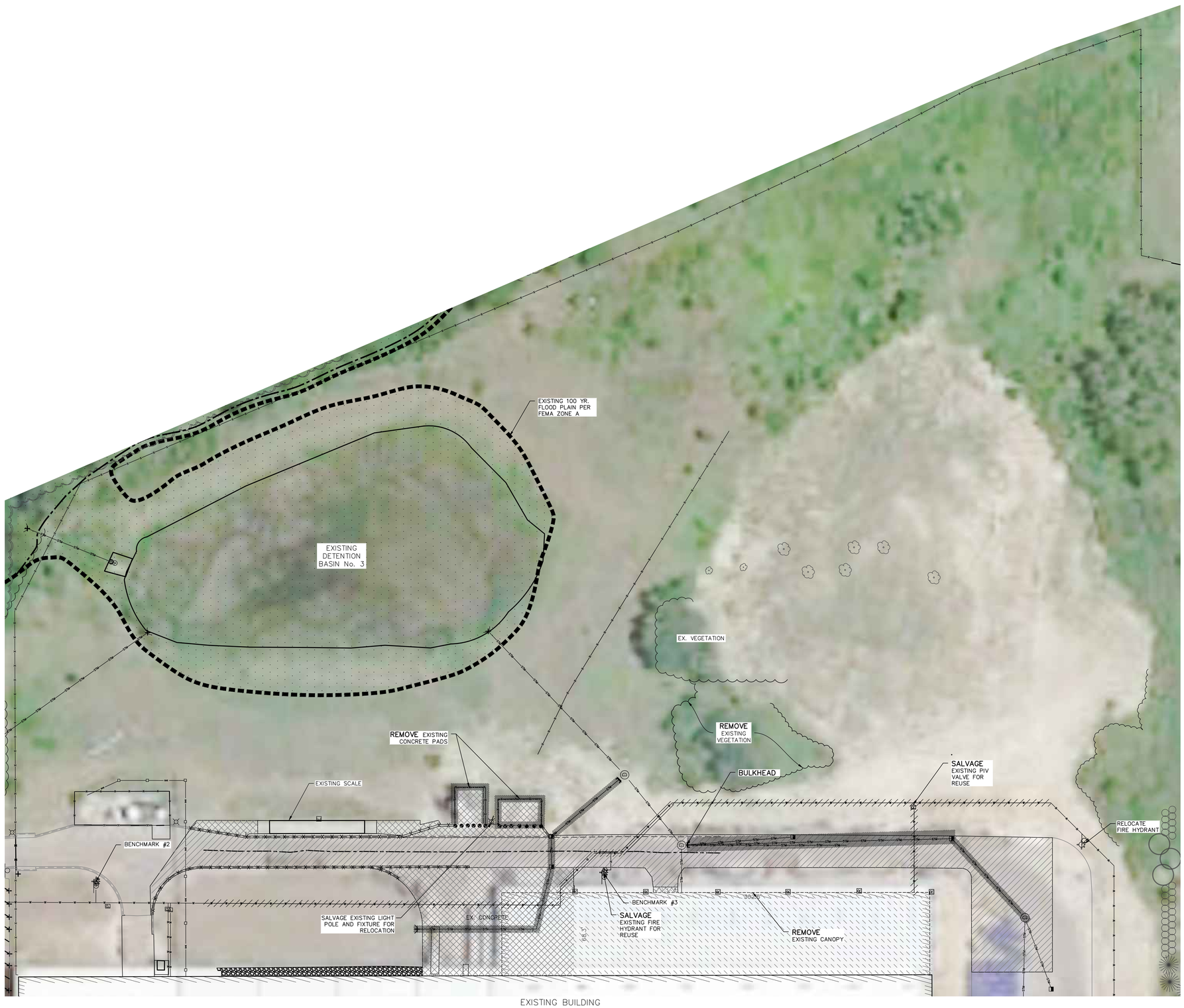
OVERALL SITE PLAN AND EXISTING CONDITIONS
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C2–0.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=100'
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C2.0



40 0 40 80 120

Scale 1" = 40'

NOTES

1. BENCHMARKS
   - #1. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 204'± NORTH AND 93'± WEST OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 908.84 (NAVD 88)
   - #2. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 81'± WEST AND 66'± SOUTH OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 915.75 (NAVD 88)
   - #3. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 88'± WEST AND 494'± SOUTH OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 912.53 (NAVD 88)
2. THE CONTRACTOR SHALL CALL "MISS DIG" AT 811 OR 1-800-482-7171 AT LEAST THREE (3) WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO CONSTRUCTION.
3. LSG ENGINEERS & SURVEYORS WILL NOT BE RESPONSIBLE FOR FIELD DESIGN CHANGES MADE BY THE CONTRACTOR OR THE CONTRACTOR'S SURVEYOR WHERE THESE DESIGN CHANGES HAVE NOT BEEN APPROVED BY LSG ENGINEERS & SURVEYORS.
4. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO THE FACE OF CURB AND ALL BUILDING AND PAVEMENT LINES ARE PARALLEL AND/OR PERPENDICULAR TO THE EAST WALL OF THE BUILDING.

DEMOLITION LEGEND

- CONCRETE REMOVAL
- ASPHALT REMOVAL
- BUILDING DEMOLITION (SEE ARCH. PLANS)
- EXISTING UTILITIES TO BE REMOVED (12"STM 12"STM)
- FENCING REMOVAL (X X X)
- LIGHT POLE & BASE REMOVAL
- SIGN POLE & BASE REMOVAL
- EXISTING UTILITY (ABANDON) (S S S S)
- CURB & GUTTER REMOVAL
- TREES TO BE REMOVED

BY	ADJ	SEP
REVISIONS/SUBMITTALS		
DESCRIPTION		
60% SET		
FOR SITE PLAN REVIEW AND PERMITS		
DATE		
06/16/21		
7/2/21		

LSG Engineers & Surveyors

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
No. 32017
LICENSED PROFESSIONAL ENGINEER

3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

Gestamp

200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244-8800

WIELAND

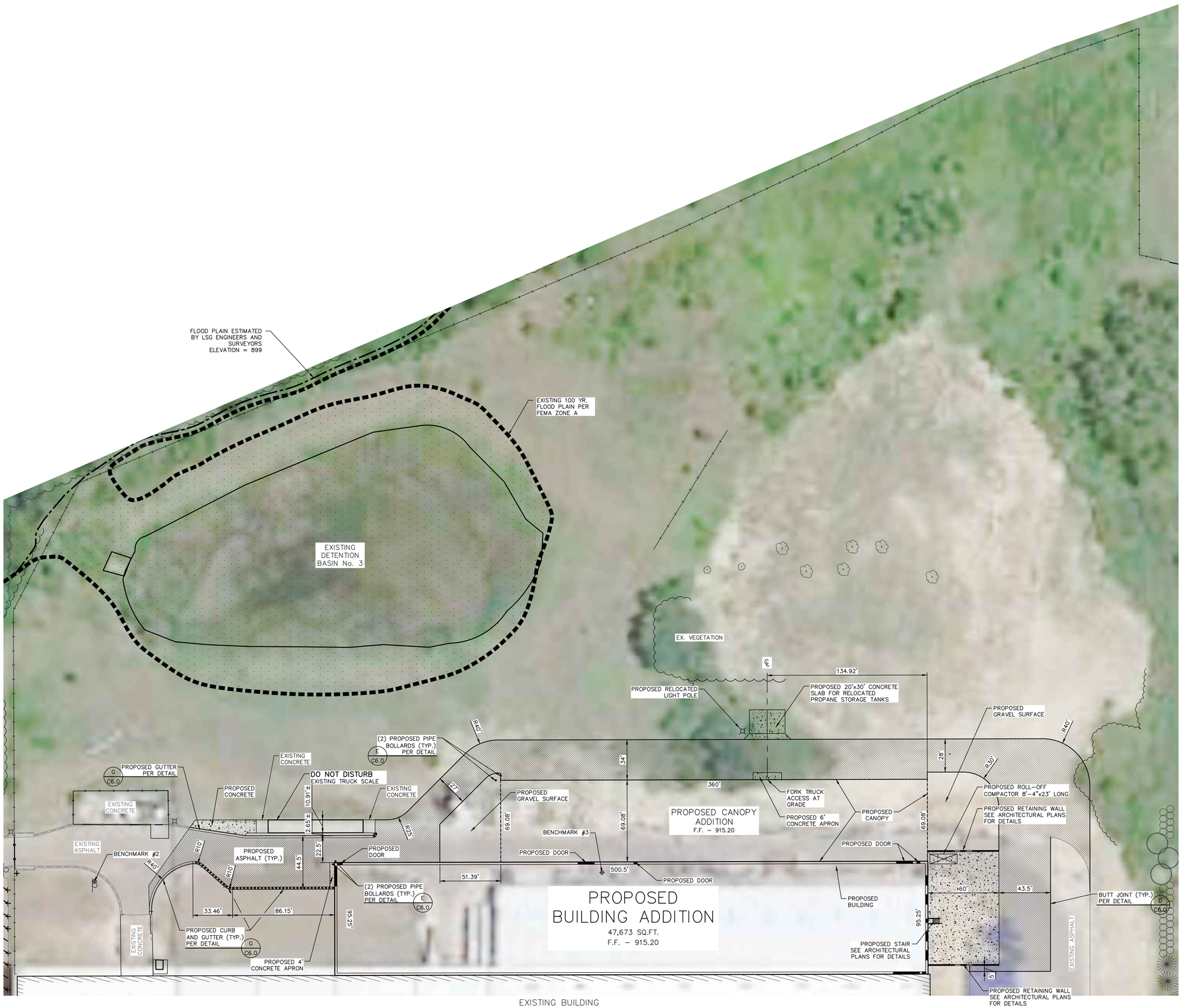
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

DETAILED DEMOLITION PLAN
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C2-1.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=40'
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C2.1

FILE: L:\2679 (WB GESTAMP MASON 2021)\C\6 PLANS\C2-1.DWG - PLOT DATE: 7/2/2021 3:55 PM BY: Shannon Pugh SCALE: 1:1



40 0 40 80 120

Scale 1" = 40'

NOTES

1. BENCHMARKS

   #1. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 204'± NORTH AND 93'± WEST OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 908.84 (NAVD 88)

   #2. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 81'± WEST AND 66'± SOUTH OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 915.75 (NAVD 88)

   #3. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 88'± WEST AND 494'± SOUTH OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 912.53 (NAVD 88)

2. THE CONTRACTOR SHALL CALL "MISS DIG" AT 811 OR 1-800-482-7171 AT LEAST THREE (3) WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO CONSTRUCTION.
3. LSG ENGINEERS & SURVEYORS WILL NOT BE RESPONSIBLE FOR FIELD DESIGN CHANGES MADE BY THE CONTRACTOR OR THE CONTRACTOR'S SURVEYOR WHERE THESE DESIGN CHANGES HAVE NOT BEEN APPROVED BY LSG ENGINEERS & SURVEYORS.
4. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO THE FACE OF CURB AND ALL BUILDING AND PAVEMENT LINES ARE PARALLEL AND/OR PERPENDICULAR TO THE EAST WALL OF THE BUILDING.

BY	ADJ	DESCRIPTION	DATE
SEP	AJI	FOR SITE PLAN REVIEW AND PERMITS	7/2/21
		60% SET	06/16/21

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
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www.lsg-es.com

PREPARED FOR:

Gestamp

200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244-8800

WIELAND

4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

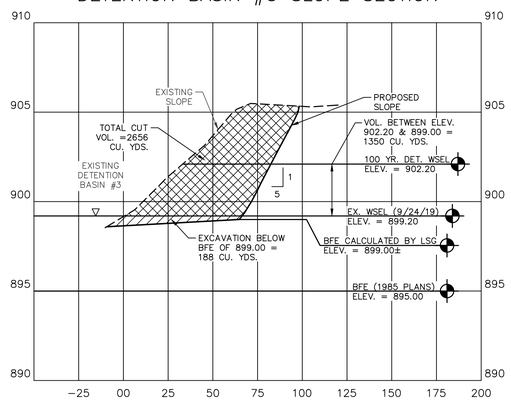
DETAILED SITE PLAN
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C3-0.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=40'
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C3.0

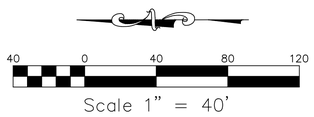
FILE: L:\2679 (MB GESTAMP MASON 2021)\C\6 PLANS\C3-0.DWG - PLOT DATE: 7/2/2021 3:55 PM BY: Shannon Pugh SCALE: 1:1

DETENTION BASIN #3 SLOPE SECTION



DETAIL B / C4.0

SCALE: HOR. 1"=40'
VERT. 1"=4'



NOTES

1. BENCHMARKS
   - #1. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 204'± NORTH AND 93'± WEST OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 908.84 (NAVD 88)
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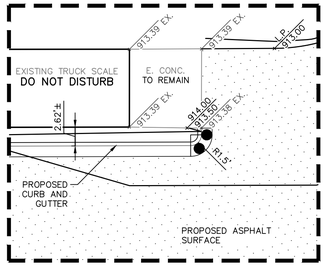
5. SEE SHEET C7.0 FOR SOIL EROSION AND SEDIMENTATION CONTROL PLAN.



DETAIL A / C4.0

7/2/21	FOR SITE PLAN REVIEW AND PERMITS	SEP	AJ
06/16/21	60% SET	AJI	BY
DATE	DESCRIPTION		

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
No. 32017
REGISTERED PROFESSIONAL ENGINEER

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www.lsg−es.com

PREPARED FOR:

Gestamp

200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244−8800

WIELAND

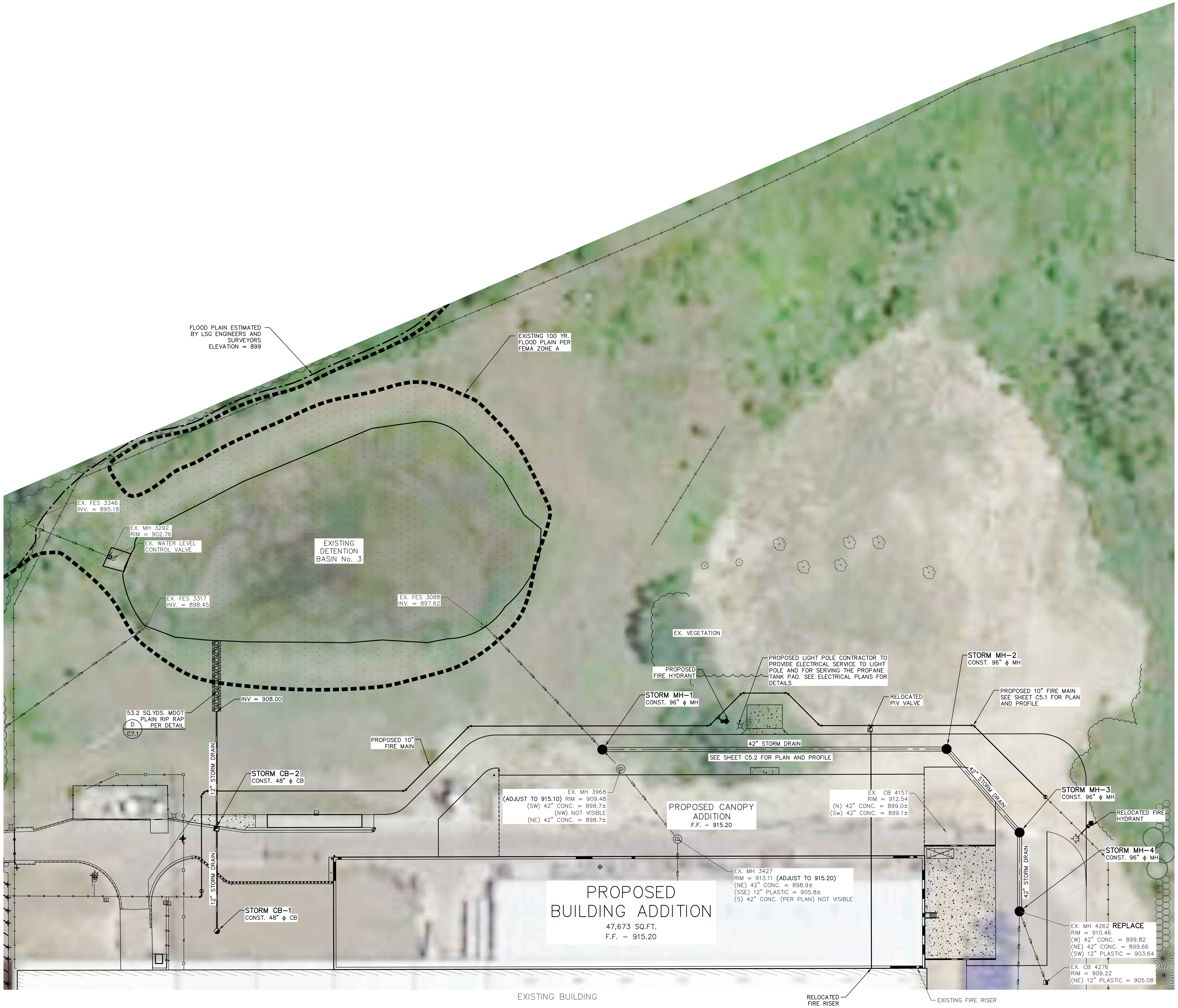
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372−8650

DETAILED GRADING PLAN
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C4−0.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE	
HOR.	1"=40'
VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C4.0

FILE: L:\2679 (WB GESTAMP MASON 2021)\C\C6 PLANS\C4−0.DWG − PLOT DATE: 7/2/2021 3:56 PM BY: Shannon Pugh SCALE: 1:1



40 0 40 80 120

Scale 1" = 40'

NOTES

1. BENCHMARKS

   #1. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 204'± NORTH AND 93'± WEST OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 908.84 (NAVD 88)

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REVISIONS/SUBMITTALS

DATE	DESCRIPTION	BY
7/2/21	FOR SITE PLAN REVIEW AND PERMITS	SEP
06/16/21	60% SET	AJI

LSG
Engineers & Surveyors

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
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www.lsg-es.com

PREPARED FOR:

Gestamp
200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244-8800

WIELAND
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

DETAILED UTILITY PLAN
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG
811
Know what's **below.**
Call before you dig.

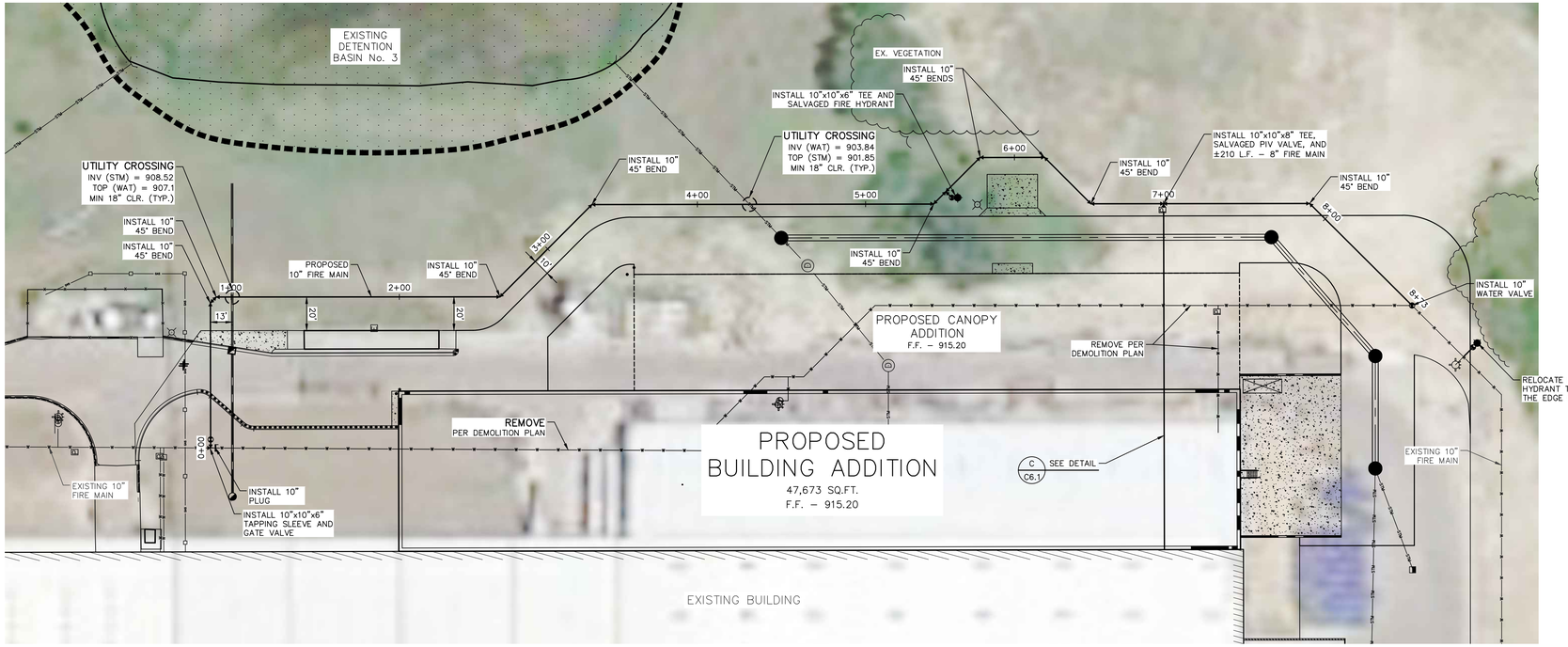
FILE C5-0.DWG
DESIGNED BY ADB
DRAWN BY AJI
CHECKED BY ADB
DATE MAY 24, 2021

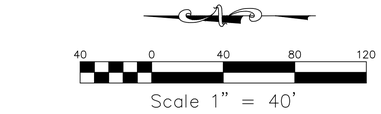
SCALE
HOR. 1"=40'
VERT. N/A

PROJECT NO.
2679

SHEET NO.
C5.0

FILE: L:\2679 (WB GESTAMP MASON 2021)\C\6 PLANS\C5-0.DWG – PLOT DATE: 7/2/2021 3:56 PM BY: Shannon Pugh SCALE: 1:1





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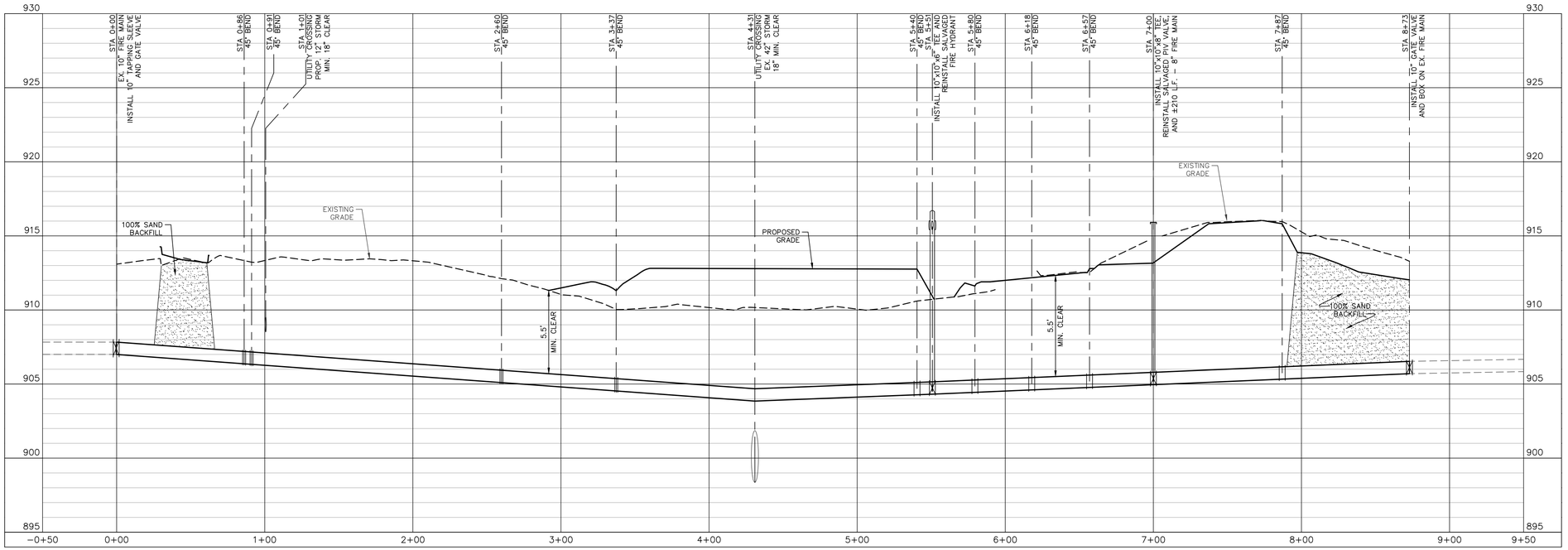

BY	DESCRIPTION	DATE
AJI	FOR SITE PLAN REVIEW AND PERMITS	7/12/21
SEP	60% SET	06/16/21

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
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FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

Gestamp

200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244-8800

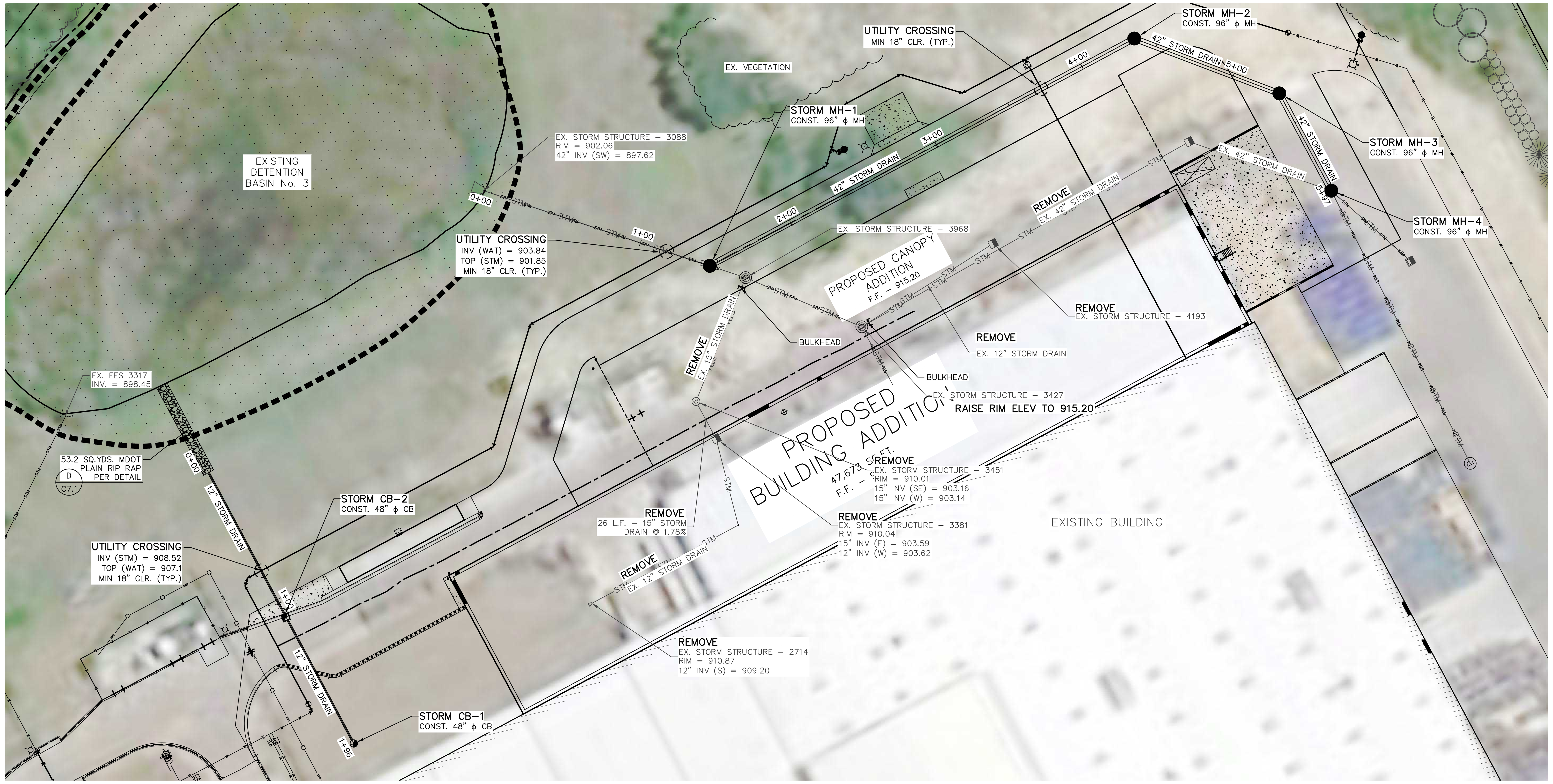
WIELAND

4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

FIRE MAIN PLAN AND PROFILE
FOR
GESTAMP 2021_EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C5-1.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=40'
SCALE VERT.	1"=4'
PROJECT NO.	2679
SHEET NO.	C5.1



Scale 1" = 40'

NOTES

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   #1. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 204'± NORTH AND 93'± WEST OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 908.84 (NAVD 88)
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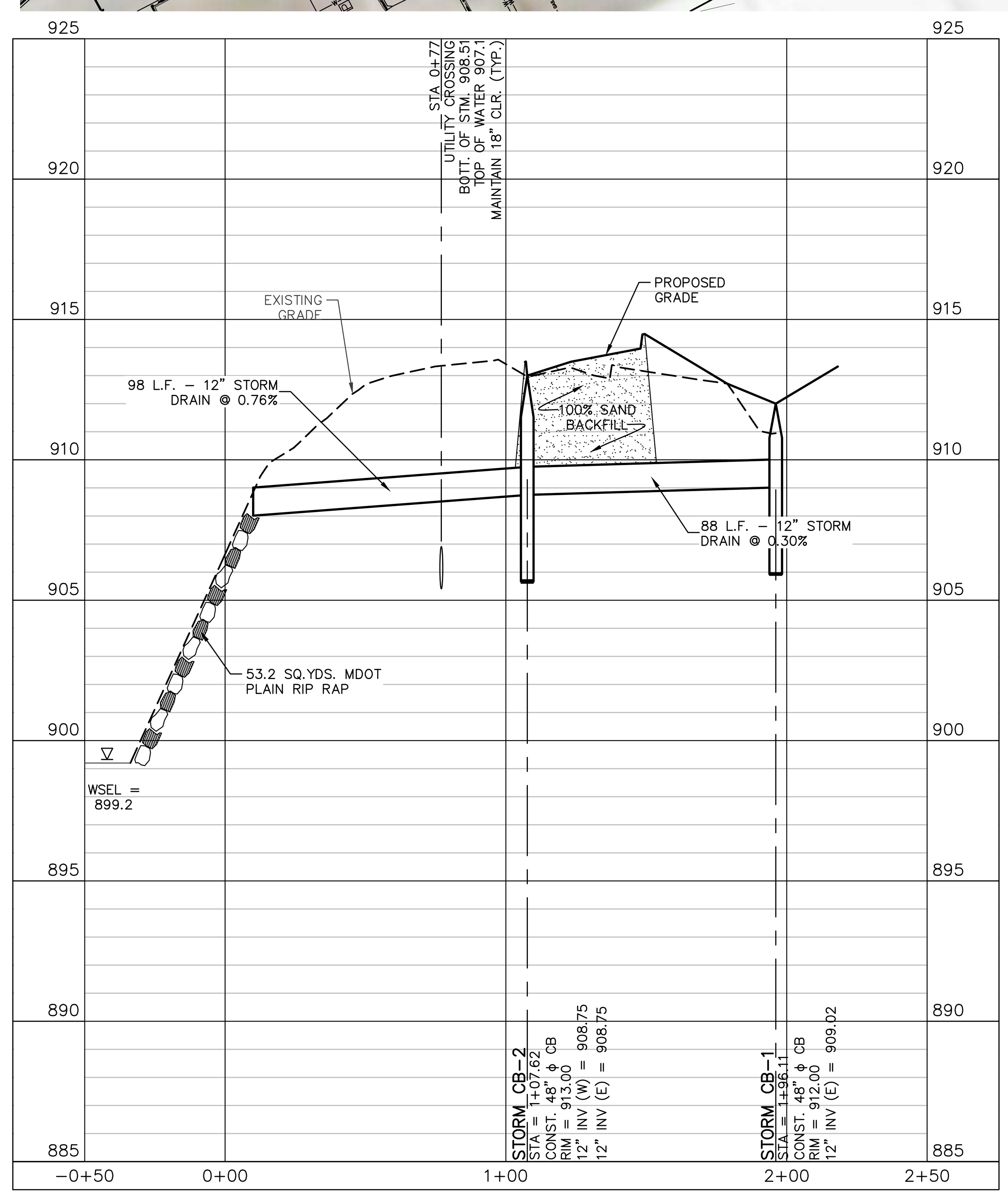

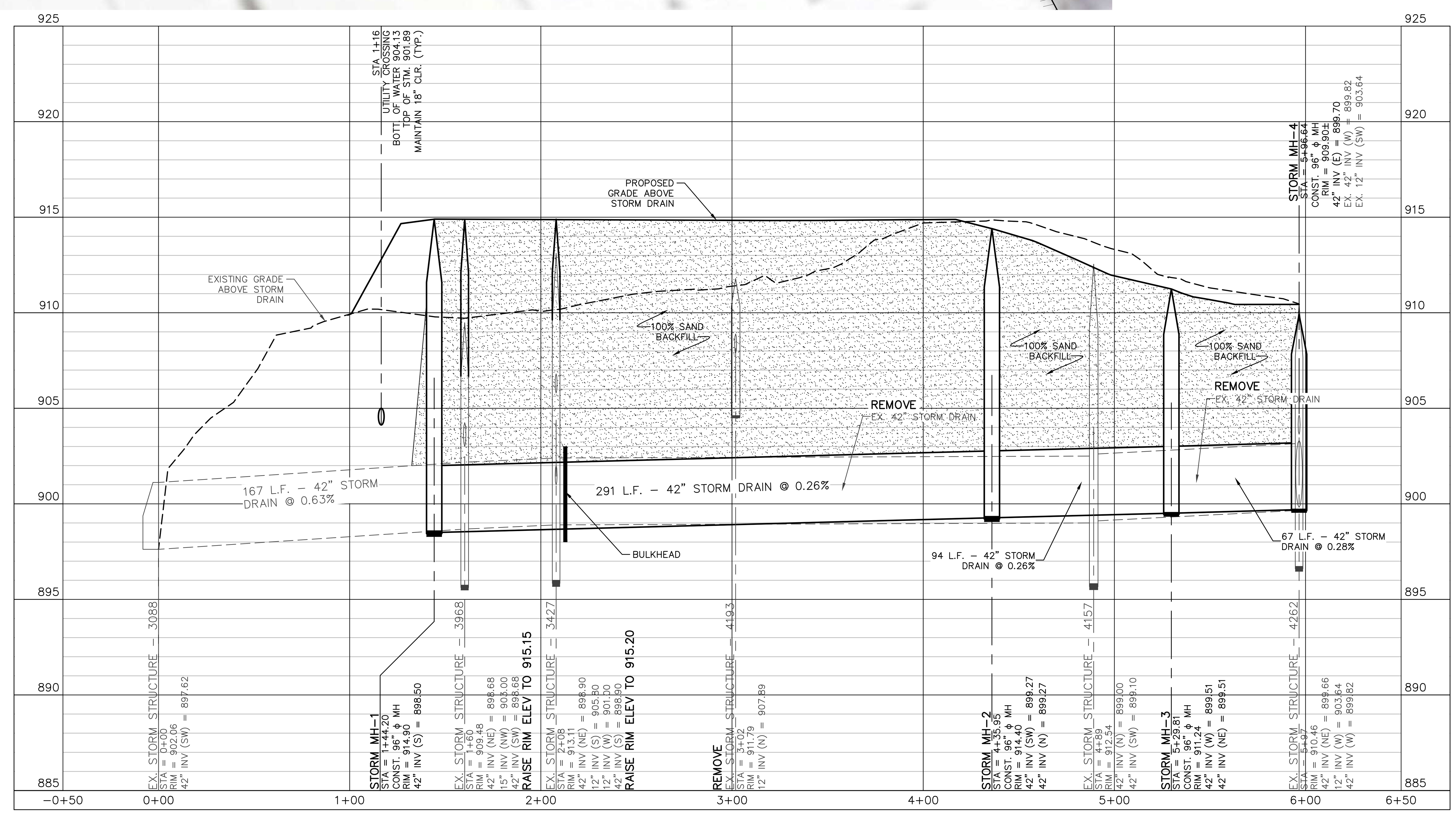

LSG Engineers & Surveyors
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ENGINEER
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FAX (517) 393-2608
www.lsg-es.com

DATE	DESCRIPTION	BY
7/2/21	FOR SITE PLAN REVIEW AND PERMITS	AJI
06/16/21	60% SET	SEP

REVISIONS/SUBMITTALS

PREPARED FOR:

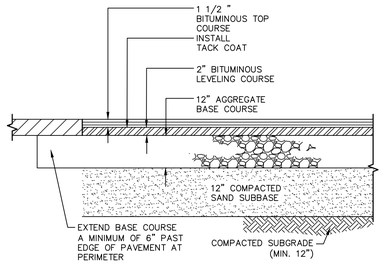
Gestamp
200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244-8800

WIELAND
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

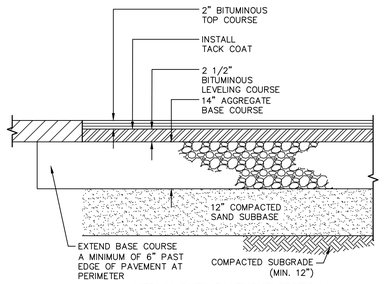
STORM DRAINAGE PLAN AND PROFILE
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C5-2.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=40'
SCALE VERT.	1"=4'
PROJECT NO.	2679
SHEET NO.	C5.2



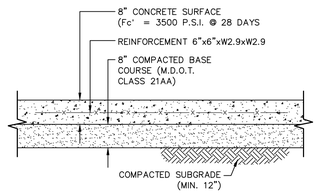
LIGHT DUTY PAVEMENT SECTION



MEDIUM DUTY PAVEMENT SECTION

MATERIAL TYPES
BIT. TOP COURSE NO. 36A TOP
BIT. LEVELING COURSE NO. 13A LEVELING
AGG. BASE COURSE 21AA
ALL MATERIAL DESIGNATIONS REFER TO M.D.O.T. STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION

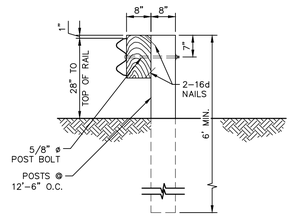
SITE PAVEMENT SECTIONS — A / C6.0



SECTION

CONCRETE SURFACE — B / C6.0

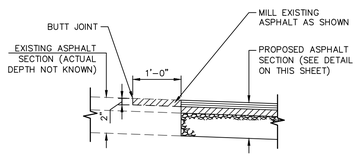
(NOT TO SCALE)



NOTE:

SAWED TREATED TIMBER POSTS 6"x8"x6' AND SAWED TREATED TIMBER OFFSET BLOCKS 6"x8"x14" SHALL BE USED.

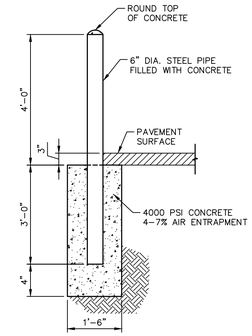
GUARDRAIL POST — C / C6.0



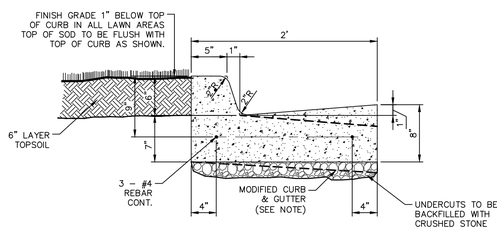
BUTT JOINT DETAIL — D / C6.0

CONTRACTION AND EXPANSION JOINT NOTES:

1. PLACE 1" FIBER JOINT FILLER AT 40' MAXIMUM INTERVALS.
2. PLACE 1" FIBER JOINT FILLER AT SPRING POINTS OF CURB RETURNS. (AND INTERSECTING STREETS)
3. PLACE 1" FIBER JOINT FILLER IN ADJACENT CONTRACTION JOINTS EACH SIDE OF CATCH BASINS.
4. PLACE CONTRACTION JOINTS AT 40' MAXIMUM INTERVALS. (NO SAW CUT JOINTS ALLOWED)



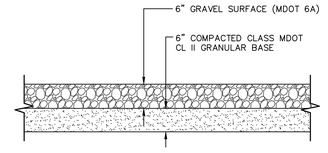
PIPE BOLLARD DETAIL — E / C6.0



NOTE:

MODIFIED CURB AND GUTTER SHALL BE THE SAME DETAIL BUT THE GUTTER SHALL SLOPE AWAY FROM THE CURB FACE @ 1"/FT.

STANDARD CURB & GUTTER DETAIL — G / C6.0



GRAVEL SURFACE — F / C6.0

BY	DESCRIPTION	DATE
AJI	FOR SITE PLAN REVIEW AND PERMITS	7/2/21
SEP	60% SET	06/16/21

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors

STATE OF MICHIGAN
ALAN D. BOYER
ENGINEER
No. 32017
REGISTERED PROFESSIONAL ENGINEER

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SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
www.lsg-es.com

PREPARED FOR:

Gestamp

200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244-8800

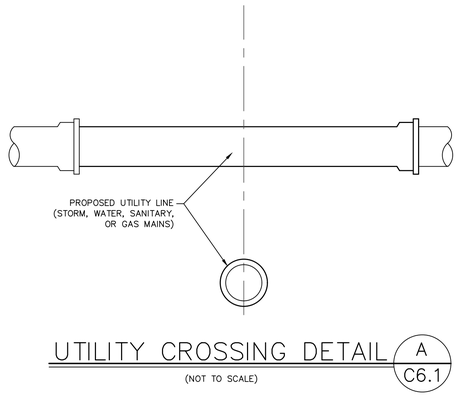
WIELAND

4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

MISCELLANEOUS DETAILS
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

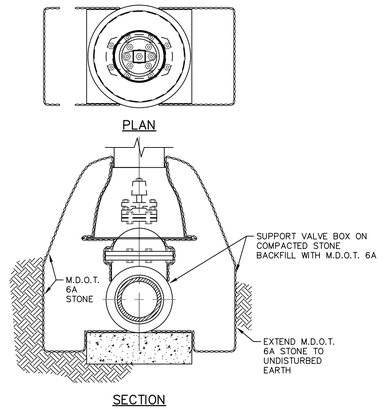
MISS DIG 811
Know what's **below.** **Call** before you dig.

FILE	C6-0.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	N/A
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C6.0



UTILITY CROSSING DETAIL A C6.1

(NOT TO SCALE)



DETAIL OF SETTING OF VALVE BOXES B C6.1

(NOT TO SCALE)

PIPE DIAMETER	TEE, 90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS	DEAD ENDS	REDUCERS (ONE SIZE REDUCTION)*	REDUCERS (TWO SIZE REDUCTION)*
4	11	5	2	1	28	--	--
6	16	7	3	2	41	21	--
8	21	9	4	2	52	21	49
12	30	12	6	3	75	40	81
16	38	16	8	4	97	41	96
20	46	19	9	5	118	42	94
24	54	22	11	5	139	42	92
30	65	27	13	6	169	59	117
36	75	31	15	7	197	59	132

IF REQUIRED PIPE DIAMETER IS NOT LISTED IN THIS TABLE, THE NEXT LARGEST PIPE DIAMETER SHALL BE USED.

THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER). FOR OTHER TEST PRESSURES, ALL VALUES TO BE INCREASED OR DECREASED PROPORTIONALLY.

THE VALUES PROVIDED OF RESTRAINT LENGTH ARE IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FOR TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM.

IF TIE RODS ARE USED, USE FOUR MINIMUM AND ADD 1/8 INCH TO BAR DIAMETER AS CORROSION ALLOWANCE.

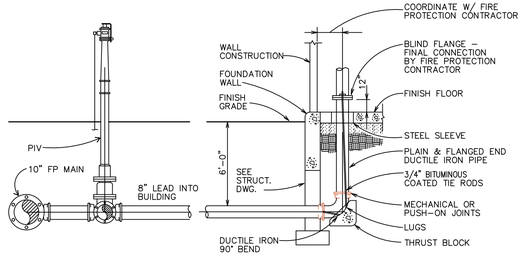
* SIZE REDUCTION IS BASED UPON PIPE DIAMETER SHOWN IN THIS TABLE:

BASED UPON:

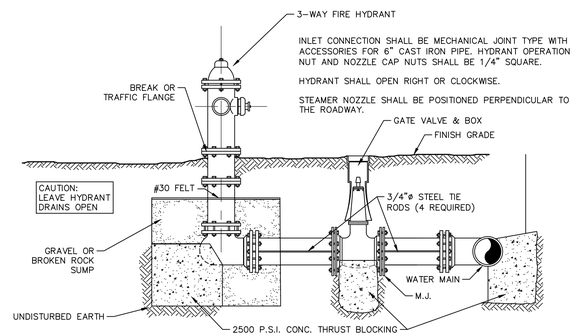
INTERNAL PRESSURE:	180
PIPE DEPTH:	5'
BEDDING CLASS:	TYPE 4
SOIL TYPE:	GOOD SAND
SAFETY FACTOR:	2

PIPE RESTRAINT SCHEDULE D C6.1

GROUND BURIED PRESSURE PIPE – DUCTILE IRON AND PVC PIPE



AUTOMATIC SPRINKLER RISER CONNECTION C C6.1



TYPICAL FIRE HYDRANT ASSEMBLY DETAIL E C6.1

DATE	DESCRIPTION	BY
7/2/21	FOR SITE PLAN REVIEW AND PERMITS	SEP
06/16/21	60% SET	AJI

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors

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Gestamp

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WIELAND

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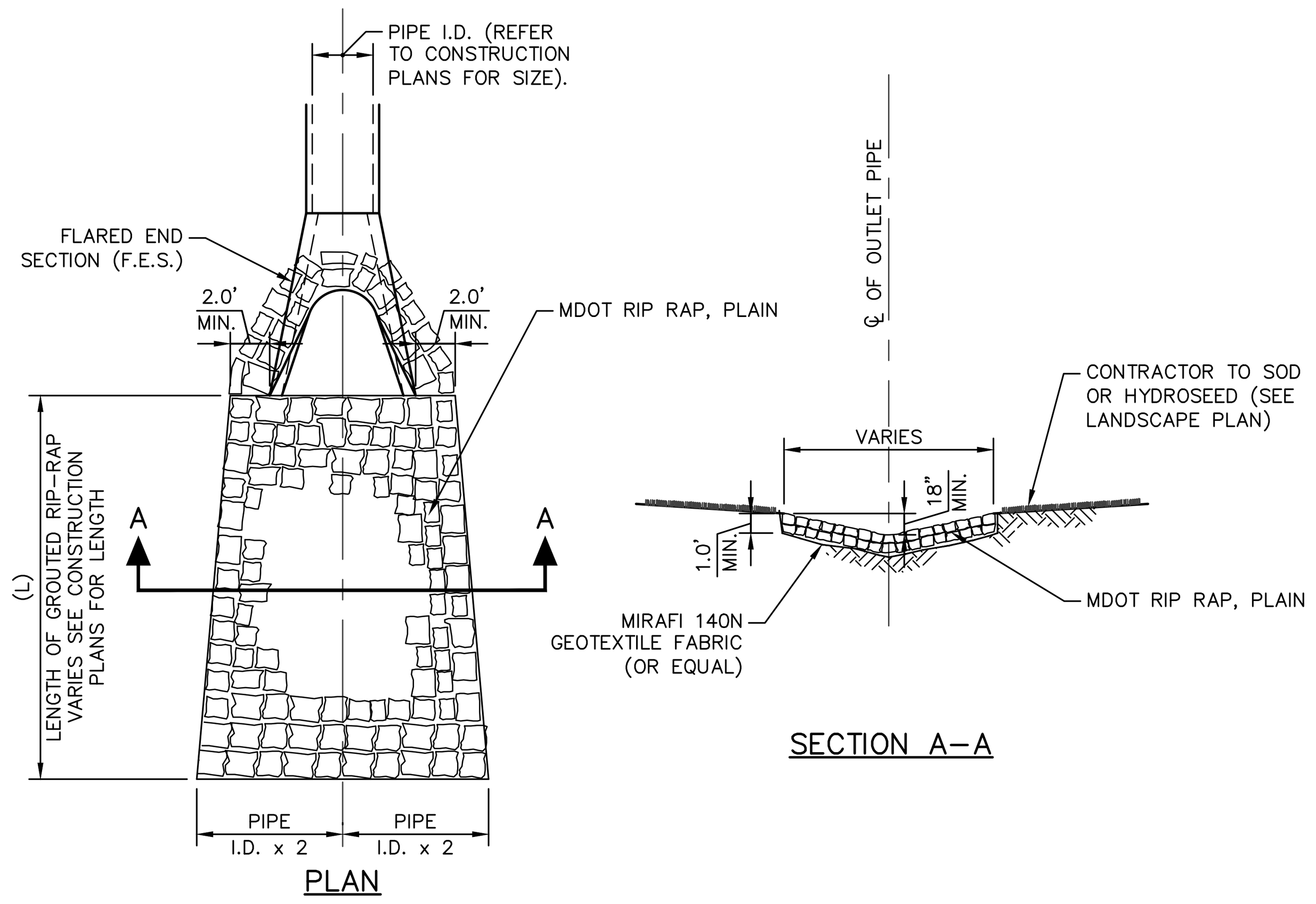
PHONE # (517) 372-8650

FIRE MAIN DETAILS
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811

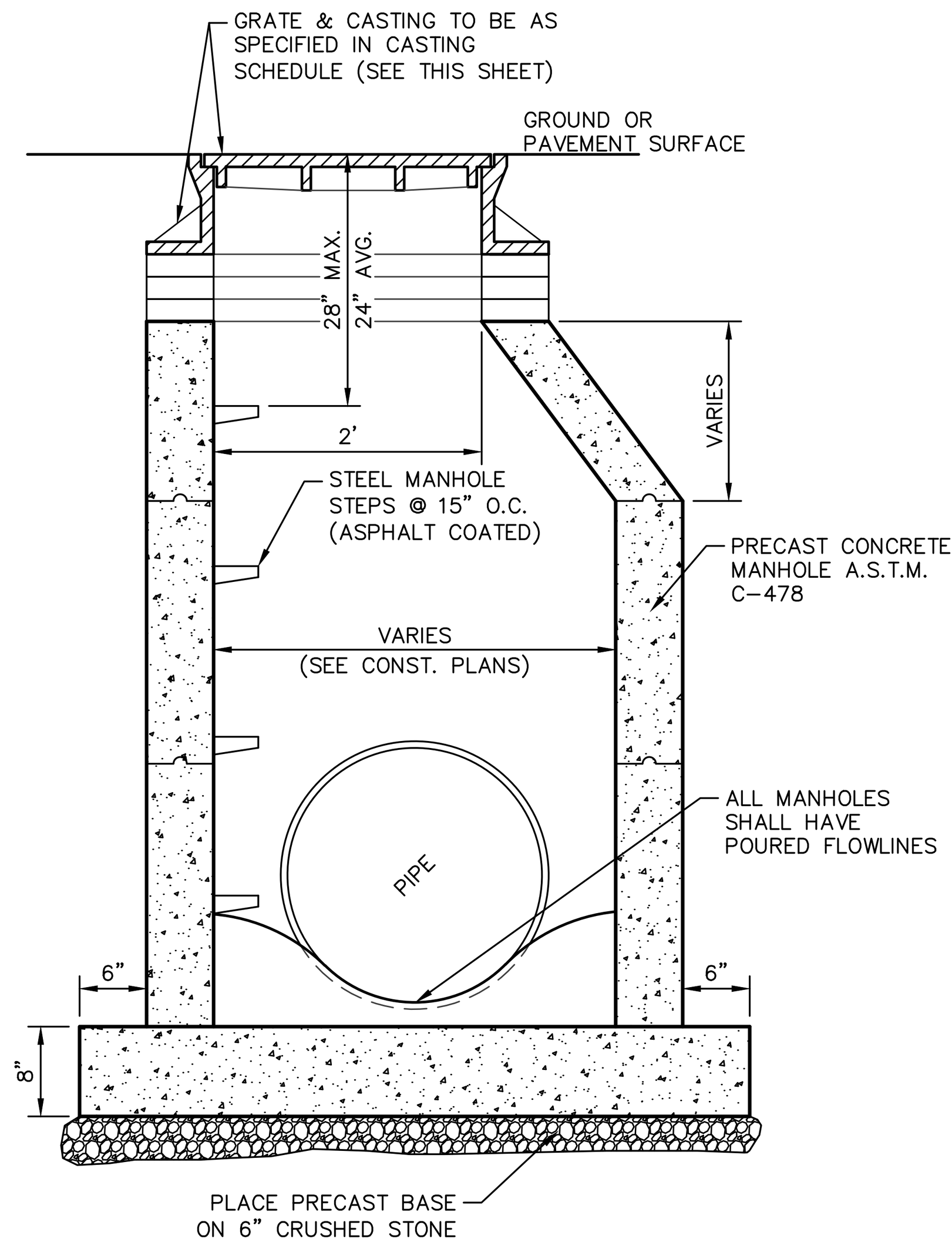
Know what's **below.**
Call before you dig.

FILE	C6-1.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	N/A
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C6.1



RIP-RAP DETAIL F C6.2

(NOT TO SCALE)

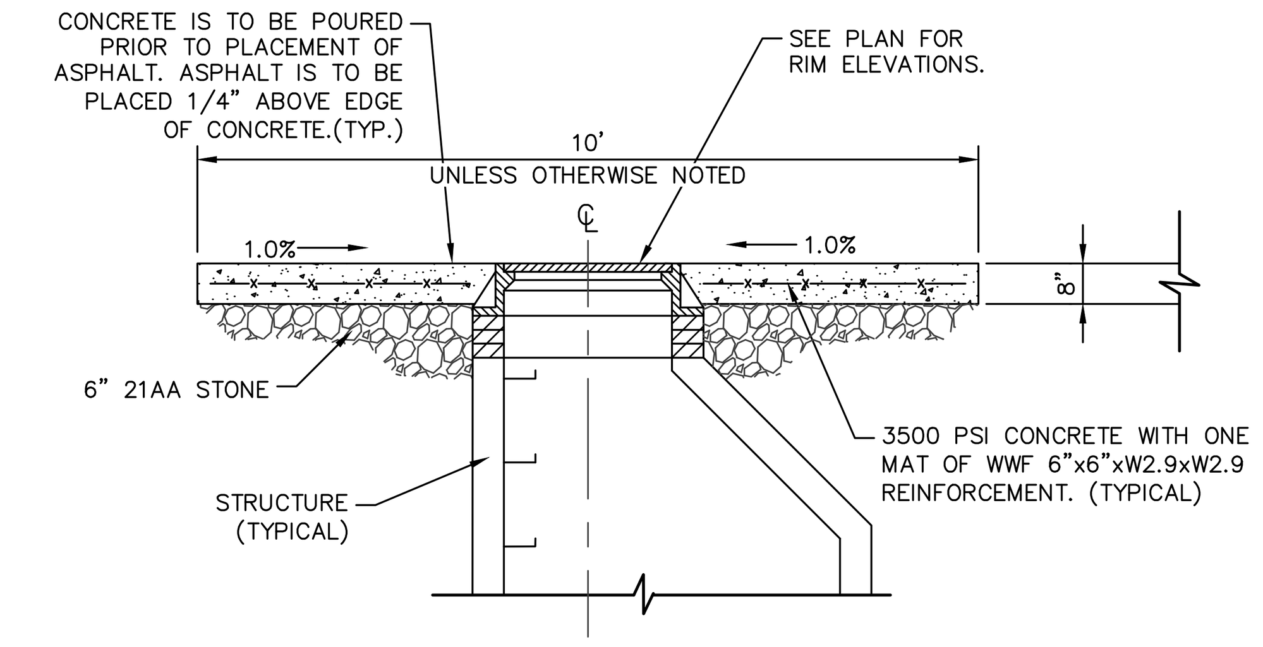


NOTE:

ALL FRAMES AND COVERS FOR DRAINAGE STRUCTURES SHALL BE NON-ROCKING AND MADE OF HEAVY DUTY CAST IRON.

MANHOLE DETAIL A C6.2

(NOT TO SCALE)

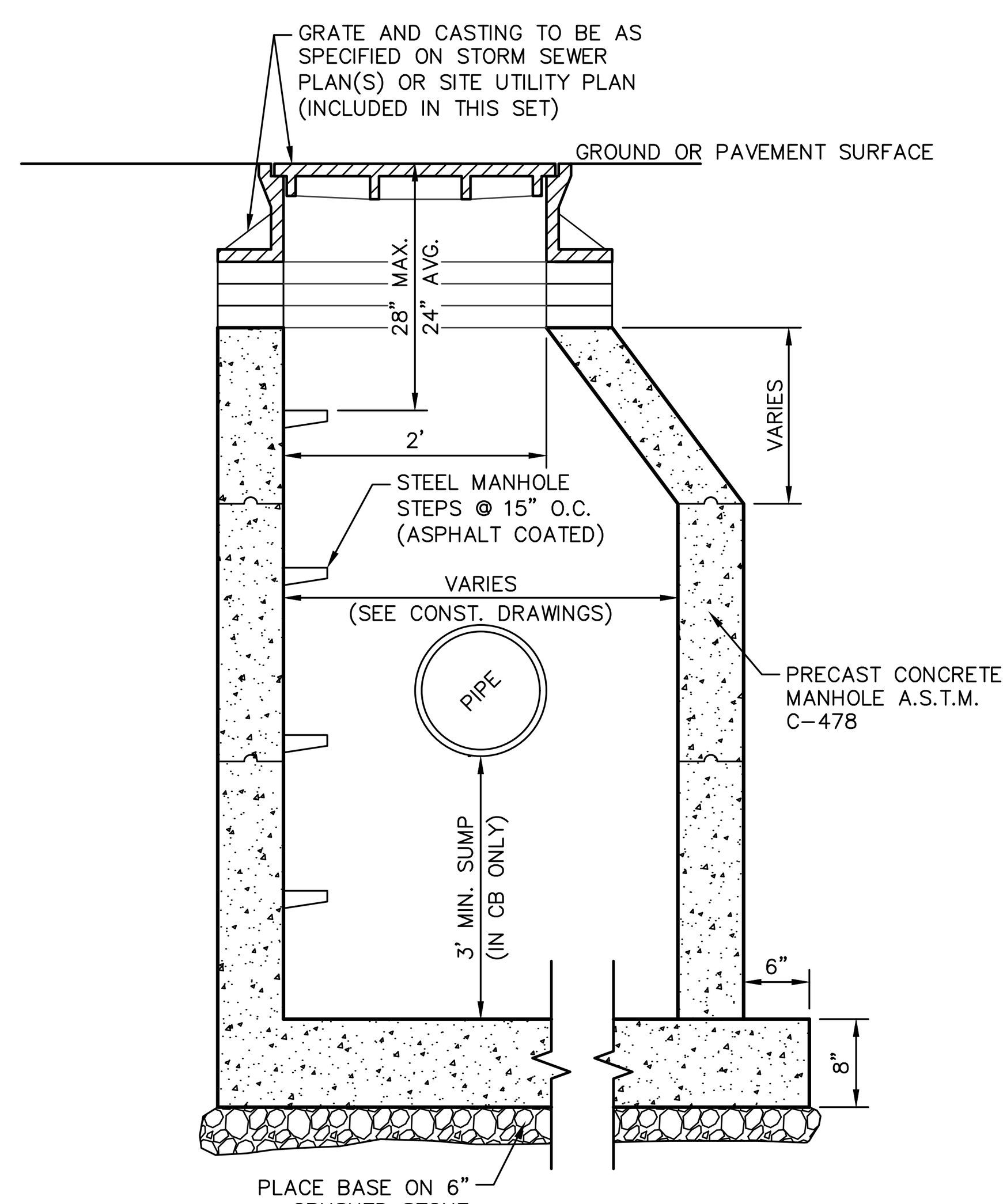


STRUCTURE COLLAR B C6.2

(NOT TO SCALE)

MANHOLE/CATCH BASIN CASTING SCHEDULE

DESIGNATION	E.J.I.W. #1040 W/ TYPE A COVER (OR EQUAL)	E.J.I.W. #7010 W/ TYPE M4 GRATE (OR EQUAL)
CB No. 1		—
MH No. 1	—	
3968	—	
3427	—	
MH No.2	—	
MH No.3	—	
4262	—	

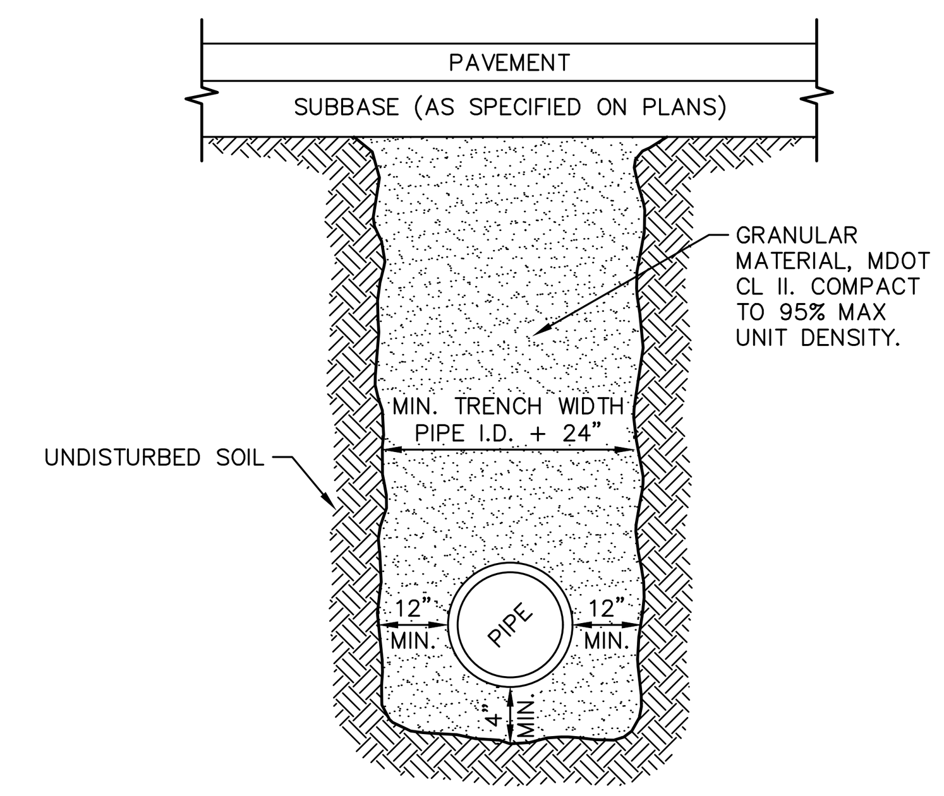


NOTE:

ALL FRAMES AND COVERS FOR DRAINAGE STRUCTURES SHALL BE NON-ROCKING AND MADE OF HEAVY DUTY CAST IRON.

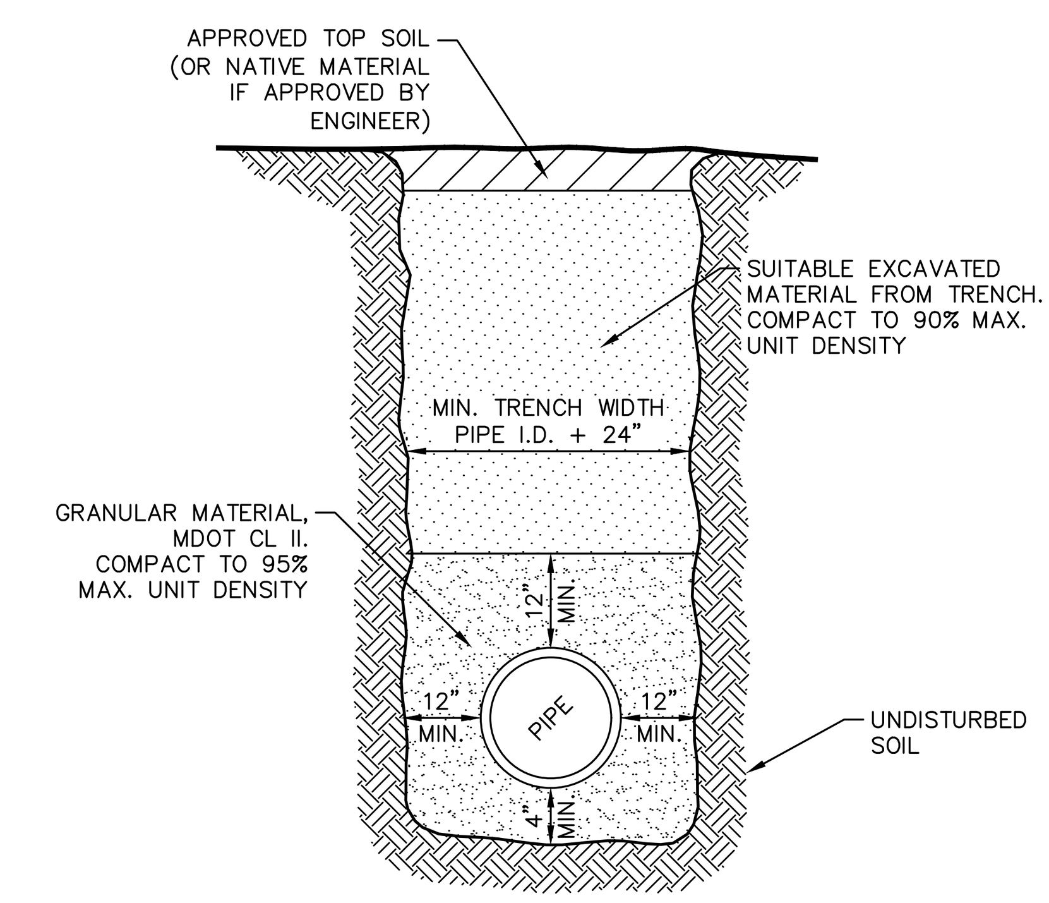
CATCH BASIN/MANHOLE C C6.2

(NOT TO SCALE)



TYPICAL TRENCH DETAIL D C6.2

UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED



TYPICAL TRENCH DETAIL E C6.2

NOT UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED

DATE	DESCRIPTION	BY
7/2/21	FOR SITE PLAN REVIEW AND PERMITS	SEP
06/16/21	60% SET	AJI

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors

STATE OF MICHIGAN ALAN D. BOYER ENGINEER No. 32017 LICENSED PROFESSIONAL ENGINEER

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WIELAND

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PHONE # (517) 372-8650

STORM DRAINAGE DETAILS
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811 Know what's below. Call before you dig.

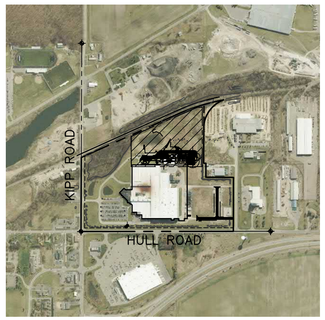
FILE C6-2.DWG
DESIGNED BY ADB
DRAWN BY AJI
CHECKED BY ADB
DATE MAY 24, 2021

SCALE
HOR. N/A
VERT. N/A

PROJECT NO. 2679

SHEET NO. C6.2

FILE: L:\2679 (WB GESTAMP MASON 2021)\C\6 PLANS\C6-2.DWG - PLOT DATE: 7/2/2021 3:57 PM BY: Shannon Pugh SCALE: 1:1



SCALE: 1"=1000'

100 0 100 200 300

Scale 1" = 100'

NOTES

1. BENCHMARKS

   #1. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 204'± NORTH AND 93'± WEST OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 908.84 (NAVD 88)

   #2. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 81'± WEST AND 66'± SOUTH OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 915.75 (NAVD 88)

   #3. NORTHWEST FLANGE BOLT ON FIRE HYDRANT, 88'± WEST AND 494'± SOUTH OF THE NORTHEAST CORNER OF BUILDING. ELEVATION: 912.53 (NAVD 88)

2. THE CONTRACTOR SHALL CALL "MISS DIG" AT 811 OR 1-800-482-7171 AT LEAST THREE (3) WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO CONSTRUCTION.
3. LSG ENGINEERS & SURVEYORS WILL NOT BE RESPONSIBLE FOR FIELD DESIGN CHANGES MADE BY THE CONTRACTOR OR THE CONTRACTOR'S SURVEYOR WHERE THESE DESIGN CHANGES HAVE NOT BEEN APPROVED BY LSG ENGINEERS & SURVEYORS.
4. UNLESS OTHERWSE NOTED, ALL DIMENSIONS ARE TO THE FACE OF CURB AND ALL BUILDING AND PAVEMENT LINES ARE PARALLEL AND/OR PERPENDICULAR TO THE EAST WALL OF THE BUILDING.

LEGEND

	INLET PROTECTION AT CB
26	REFERS TO THE APPROPRIATE S.E.S.C. KEYING SYSTEM DETAIL (SEE SHEET C7.1)
	SILT FENCE AND LIMITS OF EARTH DISTURBANCE
	NRCS SOIL BOUNDARY
	LIMITS OF EARTH DISTURBANCE (NO SILT FENCE) 6.1 ACRES

SCS SOIL TYPES

AnA	AUBBEENAUBBEE-CAPAC SANDY LOAMS (0 TO 3 PERCENT SLOPES)
BrB	BOYER SANDY LOAM (0 TO 6 PERCENT SLOPES)
Ch	COHOCTAH SILT LOAM
CvraaB	CONOVER LOAM (0 TO 4 PERCENT SLOPES)
OwB	OWOSSO-MARLETTE SANDY LOAMS (2 TO 6 PERCENT SLOPES)
W	WATER

MANUAL KEYING SYSTEM

	KEY	SESC MEASURE
	3. EROSION CONTROL MEASURES	
P	1	Seeding
T	2	Mulch
T	2A	Mulch Blankets
T	6	Soil Binding Polymers
T	28	Wattles
	4. EROSION AND SEDIMENT CONTROL MEASURES	
P	40	Check Dam
P	46	Stone Filter Berm
	5. SEDIMENT CONTROL MEASURES	
T	60	Storm Drain Inlet Protection
T	61	Silt Fence
T	66	Stabilized Construction Area

BY	DESCRIPTION	DATE
AJI	60% SET FOR SITE PLAN REVIEW AND PERMITS	7/1/21
SEP	REVISIONS/SUBMITTALS	06/16/21

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PREPARED FOR:

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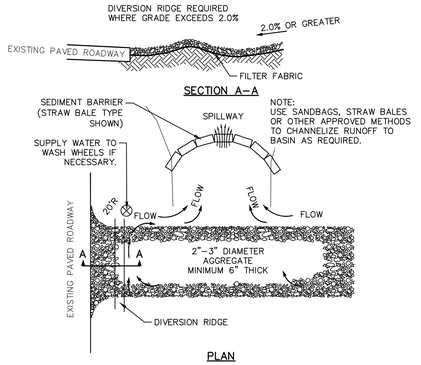
WIELAND
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372-8650

SOIL EROSION AND SEDIMENTATION CONTROL PLAN
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C7-0.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=100'
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C7.0



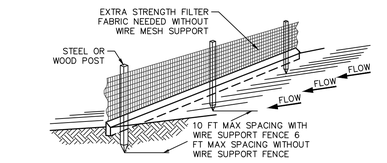
NOTES:

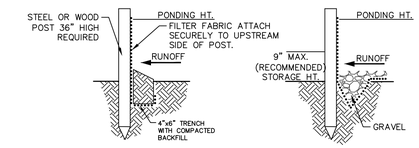
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT — A — C7.1

61. SILT FENCE MAINTENANCE

- INSPECT THE SILT FENCE ROUTINELY TO ASSURE IT HAS NOT BEEN KNOCKED DOWN AND FOLLOWING A PRECIPITATION EVENT THAT RESULTS IN RUNOFF. REMOVE ALL SEDIMENT WHEN IT REACHES 50 PERCENT OF ITS CAPACITY AND MAKE REPAIRS PROMPTLY.
- MAINTAIN THE SILT FENCE UNTIL THE DISTURBED AREA IS COMPLETELY STABILIZED WITH AN EFFECTIVE VEGETATIVE COVER.
- REMOVE ACCUMULATED SEDIMENT AND SILT FENCE AND VEGETATE THE DISTURBED AREAS.
- SILT FENCE MAY BE REUSED.





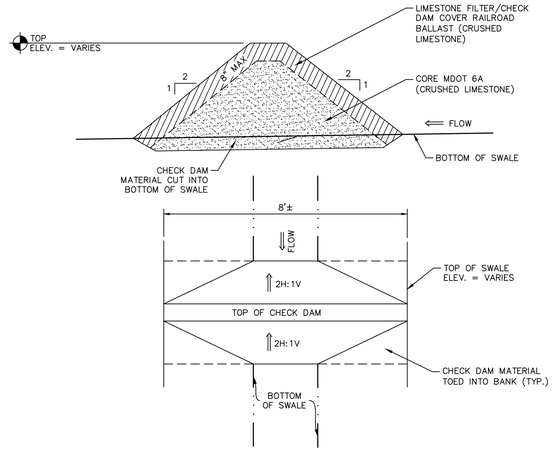
STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

ALTERNATE DETAIL
TRENCH WITH GRAVEL

NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF–SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE — B — C7.1



LIMESTONE FILTER/CHECK DAM — C — C7.1

BY	REVISIONS/SUBMITTALS	DESCRIPTION	DATE
AJI	FOR SITE PLAN REVIEW AND PERMITS	60% SET	7/12/21 06/16/21

LSG Engineers & Surveyors
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PREPARED FOR:

Gestamp

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WIELAND
4162 ENGLISH OAK DRIVE
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PHONE # (517) 372–8650

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS FOR GESTAMP 2021 EXPANSION

200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811
Know what's below. Call before you dig.

FILE	C7–1.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	N/A
SCALE VERT.	N/A
PROJECT NO.	2679
SHEET NO.	C7.1

STANDARD EROSION AND SEDIMENTATION CONTROL PLAN NOTES

1. BENCHMARKS

   #1. Northwest flange bolt on fire hydrant, 204'± North and 93'± West of the Northeast corner of building.
   Elevation: 908.84 (NAVD 88)

   #2. Northwest flange bolt on fire hydrant, 81'± West and 66'± South of the Northeast corner of building.
   Elevation: 915.75 (NAVD 88)

   #3. Northwest flange bolt on fire hydrant, 88'± West and 494'± South of the Northeast corner of building.
   Elevation: 912.53 (NAVD 88)

2. ALL WORK SHALL BE IN ACCORDANCE WITH EGLE (FORMERLY MDEQ) WRD PERMIT NUMBER (_X_) PERTAINING TO INLAND LAKES AND STREAMS, WETLAND PROTECTION AND FLOODPLAIN/WATER RESOURCES PROTECTION.
3. A SOIL EROSION CONTROL PERMIT SHALL BE OBTAINED FROM THE INGHAM COUNTY DRAIN COMMISSIONER PRIOR TO COMMENCING ANY GRADING ON THE SITE.
4. A NOTICE OF COVERAGE SHALL BE OBTAINED FROM THE EGLE PRIOR TO COMMENCING ANY GRADING ON SITE.
5. A FLOODPLAIN PERMIT SHALL BE OBTAINED FROM THE EGLE PRIOR TO COMMENCING ANY GRADING WITHIN THE 100 YEAR FLOODPLAIN.
6. CONTRACTOR IS TO CONTACT INGHAM COUNTY DRAIN COMMISSIONER AND LEROY TOWNSHIP AT LEAST THREE (3) DAYS PRIOR TO THE START OF CONSTRUCTION.
7. THE SITE IS MADE UP OF COHOCTAH SILT LOAM, LENAWEE SILTY CLAY LOAM, RIDDLES–HILLSDALE SANDY LOAMS AND SPINKS LOAMY SAND SOILS.
8. FOR LAND AREAS POSSESSING SLOPES EXCEEDING 15% THE CONTRACTOR SHALL:
   A. PROTECT AND STABILIZE AREAS THAT HAVE A HIGH POTENTIAL FOR SOIL EROSION.
   B. ASSURE STRUCTURAL SAFETY AND MINIMIZE HARM TO THE ENVIRONMENT ASSOCIATED WITH THE DEVELOPMENT.
   C. MINIMIZE GRADING THROUGHOUT THE SITE.
   D. PROTECT AND PRESERVE ANY VALUABLE NATURAL WILDLIFE AND/OR PLANT HABITATS WHICH COINCIDES WITH THE STEEP–SLOPE AREAS OF THE SITE.
   E. PROTECT WATER QUALITY ON AND AROUND THE SITE FROM THE ADVERSE EFFECTS OF THE PROPOSED USE.
   F. PROTECT ANY STEEP SLOPES ON ADJOINING PROPERTIES.
10. ALL SLOPES GREATER THAN 6:1 SHALL BE SEEDED AND STABILIZED IMMEDIATELY AFTER GRADE IS ESTABLISHED.
11. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL SOIL EROSION CONTROL MEASURES ON A DAILY BASIS. DURING CONSTRUCTION OWNER SHALL MAINTAIN ALL PERMANENT S.E.C. MEASURES AFTER CONSTRUCTION IS COMPLETE.
12. ALL TEMPORARY S.E.C. MEASURES SHALL BE MAINTAINED UNTIL PERMANENT MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. AT THIS TIME CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF THESE S.E.C. MEASURES.
13. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE STABILIZED IMMEDIATELY. DURING NON–GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.
14. ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO THE SITE FOR GRADING AND TO CONSTRUCT SEDIMENT BASINS, SEDIMENT TRAPS, DIVERSION TERRACES, INTERCEPTOR CHANNELS, AND/OR CHANNELS OF CONVEYANCE AS APPROPRIATE.
15. ANY AREA SUSCEPTIBLE TO WIND EROSION, INCLUDING HAUL ROUTES AND STAGING AREAS SHALL BE SPRAYED TO MINIMIZE WIND–BORN PARTICLES.
16. THE PUBLIC ROAD SHALL BE INSPECTED AND SWEPT AS NEEDED ON A DAILY BASIS.
17. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITH THE TRIBUTARY AREAS OF THOSE CONTROLS.
18. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED IMMEDIATELY.
19. SILT FABRIC FENCE MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST EXTEND AT LEAST 10 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
20. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE SILT FENCE.
21. ANY SILT FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A CHECK DAM.
22. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
23. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE STABILIZED IMMEDIATELY.
24. DIVERSIONS, CHANNELS, SEDIMENTATION BASINS, SEDIMENT TRAPS, AND STOCKPILES MUST BE STABILIZED IMMEDIATELY.
25. POLYACRYLAMIDES (SILT–STOP) SHALL BE USED ON THE SLOPED AREA OF THE CUT SITE TO MINIMIZE EROSION PRIOR TO ESTABLISHMENT OF PERMANENT SEEDING.
26. HAY OR STRAW MULCH MUST BE APPLIED AT RATES OF AT LEAST 3 TONS/ACRE.
27. THE AREAS SHOWN TO BE EMERGENT WETLAND SEEDING SHALL BE MULCHED ON THE SLOPED AREAS ONLY.
28. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROL AFTER EACH RUNOFF EVENT AND ON A DAILY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING, MUST BE PERFORMED IMMEDIATELY.
29. ENTIRE FILL AREA IS AN ACTIVE AGRICULTURAL PRODUCTION FIELD AND THEREFORE WILL NOT BE SEEDED WITH GRASS MIXES AFTER GRADING. THE AREA WILL BE SEEDED BY THE FARMER DURING SPRING PLANTING.
30. DEWATERING IS NOT ANTICIPATED. IF DEWATERING IS REQUIRED DURING CONSTRUCTION, A DEWATERING PLAN WILL BE REQUIRED TO BE SUBMITTED AND APPROVED PRIOR TO THE COMMENCEMENT OF DEWATERING.

STABILIZATION INFORMATION

INTERIM STABILIZATION (TEMPORARY SEEDING)				
SEED	TYPES	% BY WEIGHT	RATES	DATES
FORMULA E	ANNUAL RYEGRASS	100%	10.0 LBS/1000 SY	MARCH 15 TO OCT 15
LIME	PULVERIZED AG. LIMESTONE		800 LBS/ACRE	
FERTILIZER	10–20–20		140 LBS/ACRE	
MULCH	HAY OR STRAW		3 TONS/ACRE FOR AREAS EXPOSED MORE THAN 20 DAYS	
PERMANENT STABILIZATION (PERMANENT SEEDING)				
SEED	TYPES	% BY WEIGHT	RATES	DATES
FORMULA B	PERENNIAL RYE GRASS	20%	4.0 LBS/1000 SY	MARCH 15 TO JUNE 1
	CREEPING RED FESCUE	30%	6.0 LBS/1000 SY	AUGUST 1 TO OCT 15
OR	KENTUCKY BLUE GRASS	50%	11.0 LBS/1000 SY	
FORMULA D	TALL FESCUE	70%	15.0 LBS/1000 SY	MARCH 15 TO JUNE 1
	CREEPING RED FESCUE	30%	6.0 LBS/1000 SY	AUGUST 1 TO OCT 15
LIME	PULVERIZED AG. LIME STONE		800 LBS./ACRE	
FERTILIZER	10–20–20		140 LBS/ACRE	
MULCH	HAY OR STRAW		3 TONS/ACRE FOR AREAS EXPOSED MORE THAN 20 DAYS	
PERMANENT STABILIZATION (ROCK RIP–RAP SLOPE PROTECTION)				
WHERE NOTED, PLACE ROCK RIP–RAP SLOPE PROTECTION ON ONE LAYER OF MIRAFI FILTERWEAVE 400 OR EQUAL.				

SOIL EROSION CONTROL SCHEDULE

THIS NARRATIVE IS TO ACCOMPANY THE EROSION AND SEDIMENTATION CONTROL PLAN FOR THE GESTAMP MASON 2021 EXPANSION PREPARED BY LSG ENGINEERS & SURVEYORS OF LANSING, MICHIGAN, AND SHALL BE CONSIDERED A PART OF THE EROSION AND SEDIMENTATION CONTROL PLAN.

THE PROJECT SITE IS LOCATED IN SECTION 16, T2N, R1W, VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN.

I. GENERAL STATEMENT OF THE PROJECT

A. THE PROPOSED IMPROVEMENTS WITHIN THE SITE INCLUDE THE CONSTRUCTION OF COMPENSATION CUT AREA AND FILL AREA.

B. THE AREAS OF PROPOSED EARTH DISTURBANCE ARE SHOWN ON THE SOIL EROSION CONTROL PLAN.

C. THE STORM WATER MANAGEMENT FACILITIES ARE REQUIRED.

D. THE STORM WATER CALCULATIONS FOR THE SITE ARE REQUIRED.

E. ACCELERATED EROSION AND SEDIMENTATION SHALL BE LIMITED BY THE STABILIZATION OF DISTURBED AREAS AS SOON AS POSSIBLE. IN ADDITION, LIMITS OF EARTHMOVING HAVE BEEN IDENTIFIED FOR EACH PHASE OF THE SOIL EROSION CONTROL PLAN. THE CONTRACTOR SHALL NOTE THE SCHEDULE FOR EARTHMOVING AND INTERIM STABILIZATION AND THE RESTRICTIONS IMPOSED ON STARTING THE NEXT PHASE.

F. ALL DISTURBED AREAS INTENDED TO BE LAWN OR GRASS AREAS SHALL, IMMEDIATELY AFTER FINAL GRADING, BE SEEDED PER THE PERMANENT STABILIZATION MIX AND MAINTAINED.

G. THE AREA SHOWN TO BE SEEDED WITH EMERGENT WETLAND SEEDING SHALL BE SOWN AFTER THE SLOPED AREAS ABOVE THEM ARE SEEDED AND MULCHED.

H. CONSTRUCTION ON THIS PROJECT SHOULD BEGIN IN FALL 2021.

II. TOPOGRAPHIC FEATURES OF THE PROJECT AREA

THE LOCATION OF THE SITE, CONTOURS, PROPERTY LINES, ACREAGE AND ALL OTHER PHYSICAL FEATURES WERE LOCATED BY THE USE OF GROUND OBSERVATION AND ARE SHOWN ON THE PLAN.

III. TYPES, DEPTH, SLOPE AND AREAL EXTENT OF SOILS.

THE ENTIRE SITE IS MADE UP OF COHOCTAH SILT LOAM, LENAWEE SILTY CLAY LOAM, RIDDLES–HILLSDALE SANDY LOAMS AND SPINKS LOAMY SAND SOILS.

IV. PROPOSED ALTERATION TO THE AREA

ALL PROPOSED ALTERATIONS ARE SHOWN ON THE PLAN. PROPOSED GRADES HAVE BEEN SELECTED KEEPING IN MIND THE EXISTING DRAINAGE PATTERNS. THE GRADING PLAN WILL INDICATE THE FINAL GRADES OF THE SITE.

V. AMOUNT OF RUNOFF FROM THE PROJECT AREA AND THE UPSTREAM WATERSHED

THE AMOUNTS OF RUNOFF FROM THE PROJECT AREA OR FROM THE UPSTREAM WATERSHED WILL BE KEPT TO A MINIMUM BY THE USE OF SOIL EROSION CONTROL MEASURES.

VI. STAGING OF EARTHMOVING ACTIVITIES

INSTALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES.

CLEARING AND GRUBBING.

STRIP AND STOCKPILE TOPSOIL.

INITIAL EARTH MOVING TO CONSTRUCT RING ROAD AND UTILITY RELOCATION.

RELOCATE UTILITIES.

CONSTRUCT RING ROAD.

INSTALL PERMANENT SESC MEASURES, SEEDING, MULCH.

CONSTRUCT BUILDING FOUNDATIONS AND SLABS.

ERECT BUILDING.

INSTALL LANDSCAPE.

SITE RESTORATION AND FINAL PERMANENT SESC MEASURES.

VII. TEMPORARY CONTROL MEASURES AND FACILITIES FOR USE DURING EARTHMOVING

A. TOPSOIL STOCKPILES:
STOCKPILES SHALL BE USED TO CONTAIN ALL STRIPPED TOPSOIL IN A LIMITED AREA IN ORDER TO KEEP THE DISTURBED AREA TO A MINIMUM. STOCKPILES THAT WILL EXIST BETWEEN 20 DAYS AND 12 MONTHS SHALL BE STABILIZED WITH A TEMPORARY COVER CROP OF GRASS AS SET FORTH IN THE INTERIM STABILIZATION GUIDELINES.

B. STABILIZED CONSTRUCTION ENTRANCES:
THIS ENTRANCE PROTECTION FACILITY SHALL BE USED TO KEEP STORMWATER FROM FLOWING UNCHECKED FOR THE SITE AND TO COLLECT SEDIMENT OFF THE CONSTRUCTION VEHICLES.

C. SILT FENCES:
SILT FENCES SHALL BE LOCATED AS SHOWN ON THE PLAN TO SLOW RUNOFF FROM DRAINAGE WAYS AND EXPOSED BANKS AND TO PREVENT SEDIMENT FROM FLOWING ONTO ADJACENT PROPERTIES.

D. TEMPORARY SEEDING:
SEE TEMPORARY SEEDING AS NOTED ON THE PLANS.

E. CHECK DAM:
TO TEMPORARILY PROTECT VEGETATION DURING EARLY STAGES OF GROWTH OR PERMANENTLY TO REDUCE FLOW VELOCITIES.

F. THE CUT AREA WILL ACT AS A TEMPORARY SEDIMENTATION BASIN UNTIL THE SITE IS STABILIZED.

G. ENTIRE FILL AREA IS AN ACTIVE AGRICULTURAL PRODUCTION FIELD AND THEREFORE WILL NOT BE SEEDED WITH GRASS MIXES AFTER GRADING. THE AREA WILL BE SEEDED BY THE FARMER DURING SPRING PLANTING.

H. APPLY DUST CONTROL AS NEEDED TO PREVENT WIND EROSION ALONG HAUL ROADS.

I. APPLY POLYACRYLAMIDES ON THE SLOPES OF THE CUT AREAS TO MINIMIZE EROSION.

J. SWEEP PUBLIC ROADS AS NEEDED TO PREVENT TRACKING OF SOIL OFF SITE.

VIII. PERMANENT CONTROL MEASURES AND FACILITIES FOR LONG TERM PROTECTION

A. PERMANENT STABILIZATION OR PERMANENT SEEDING:
SEE PERMANENT STABILIZATION AS NOTED ON PLANS.

B. MULCH:
HAY OR STRAW MULCH SHALL BE APPLIED TO SEEDING AREAS TO HELP ESTABLISH A PERMANENT GRASS COVER AND TO PREVENT EROSION. IT SHALL BE APPLIED AT THE RATE OF 3 TONS PER ACRE.

C. EROSION CONTROL BLANKETS OR FABRIC:
IN AREAS WHERE THE SLOPE EXCEEDS 3H:1V, NORTH AMERICAN GREEN S75 SOIL EROSION CONTROL BLANKET SHALL BE INSTALLED TO PREVENT EROSION.

D. SOD:
IN AREAS WHERE STABILIZATION IS FOUND TO BE DIFFICULT, THE DEVELOPER MAY INSTALL SOD. SOD MATERIAL, PLACEMENT AND STAKING SHALL CONFORM TO THE GUIDELINE SPECIFICATIONS FOR SODDING BY THE AMERICAN SOD PRODUCERS ASSOCIATION.

E. PERMANENT STABILIZATION ENERGY DISSIPATERS OR ROCK RIP RAP SLOPE PROTECTION:
SEE PERMANENT STABILIZATION AS NOTED IN THE PLANS. ROCK RIP RAP SLOPE PROTECTION INVOLVES THE PLACEMENT OF ROCK RIP RAP ON GEOTECHNICAL FABRIC.

F. ENTIRE FILL AREA IS AN ACTIVE AGRICULTURAL PRODUCTION FIELD AND THEREFORE WILL NOT BE SEEDED WITH GRASS MIXES AFTER GRADING. THE AREA WILL BE SEEDED BY THE FARMER DURING SPRING PLANTING.

IX. TEMPORARY MAINTENANCE PROGRAM FOR THE CONTROL FACILITIES INCLUDING DISPOSAL OF MATERIALS REMOVED FROM THE CONTROL FACILITIES.

A. ALL SEDIMENT AND EROSION CONTROL FACILITIES SHALL BE CHECKED FOR DAMAGE AFTER EACH STORM. ALL FACILITIES THAT ARE DAMAGED, CLOGGED OR CAN NO LONGER PERFORM THE FILTRATION OR SEDIMENTATION OF SUSPENDED SOILS SHALL BE REPLACED.

B. ANY SEEDED AREAS THAT BECOME ERODED SHALL HAVE THE TOPSOIL REPLACED, THE GRASS SEED RESOWN AND MULCH REAPPLIED, OR AT THE DIRECTION OF THE OWNER, SOD MAY BE INSTALLED.

X. PERMANENT MAINTENANCE PROGRAM FOR THE CONTROL FACILITIES

A. AFTER THE SITE IS PERMANENTLY STABILIZED ALL SEDIMENT AND EROSION CONTROL FACILITIES AT THE CUT SITE SHALL BE CHECKED MONTHLY DURING THE REMAINDER OF THE GROWING SEASON. ALL FACILITIES THAT ARE DAMAGED, CLOGGED OR CAN NO LONGER PERFORM THE FILTRATION OR SEDIMENTATION OF SUSPENDED SOILS SHALL BE REPAIRED OR REPLACED.

B. ANY PERMANENT SEEDED AREAS THAT BECOME ERODED SHALL HAVE THE TOPSOIL REPLACED, THE GRASS SEED REGROWN AND MULCH REAPPLIED.

XI. EQUITABLE OWNER/ DEVELOPER/RESPONSIBLE PARTY

DURING CONSTRUCTION:

TO BE DETERMINED.

AFTER SITE STABILIZATION/PROJECT COMPLETION:
BLAKE SIMON
WEILAND
PROPERTY OWNER
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911

PHONE: (517) 372–8650

INGHAM COUNTY DRAIN COMMISSIONER STANDARD NOTES

1. APPROVAL OF THIS PERMIT DOES NOT AUTHORIZE ANY EARTH DISTURBANCE ACTIVITY IN STATE REGULATED WETLANDS, FLOODPLAINS, OR INLAND STREAMS EXCEPT AS APPROVED AND AUTHORIZED BY ISSUED MDEQ PERMIT WRP 015822v.1.
2. AN INGHAM COUNTY INSPECTOR IS TO VERIFY PROPER INSTALLATION OF THE SESC MEASURES FOR EACH PHASE PRIOR TO COMMENCEMENT OF THE EARTH DISTURBANCE IN EACH PHASE AS AUTHORIZED HEREIN (CONTACT JASON LYNN, 719.4901, TO ARRANGE FOR THIS INSPECTION).
3. THE PERMIT SHALL BE POSTED AT THE CONSTRUCTION ENTRANCE TO THE SITE, VISIBLE FROM A PUBLIC ROAD, UNTIL THE LAND IS PERMANENTLY STABILIZED AND THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE CLOSES THE PERMIT. LAMINATING THE PERMIT WILL HELP IT TO WITHSTAND THE WEATHER.
4. CONTACT INFORMATION FOR ALL ON–SITE CONTRACTORS WHO WILL BE DISTURBING THE EARTH, INCLUDING ON–SITE CONTACT PERSON, OFFICE, MOBILE PHONE NUMBER, EMAIL ADDRESS, AND BUSINESS ADDRESS, SHALL BE PROVIDED TO THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE, ATTENTION JASON LYNN, PRIOR TO THAT COMPANY'S COMMENCEMENT OF ANY EARTH DISTURBANCE AUTHORIZED BY THIS PERMIT.
5. UNTIL THE SITE IS PERMANENTLY STABILIZED AND THE PERMIT IS CLOSED, THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE SHALL BE COPIED THE NPDES WEEKLY LOG REPORTS REFERENCED IN THE SOIL EROSION NOTES, BY THE SECOND AND FOURTH FRIDAY EACH MONTH. REPORTS SHOULD BE SENT TO THE ATTENTION OF JASON LYNN AND REFERENCE SEP XX–XXXX. PLEASE ALSO SUBMIT A COPY OF THE NOTICE OF COVERAGE FOR THE SITE PRIOR TO COMMENCEMENT OF EARTH DISTURBANCE AUTHORIZED HEREIN.
6. THE FOLLOWING GENERAL CONDITIONS APPLY TO THE EARTH CHANGE AUTHORIZED BY THIS PERMIT:
   6.1. DESIGN, CONSTRUCT AND COMPLETE THE EARTH CHANGE IN A MANNER THAT LIMITS THE EXPOSED AREA OF DISTURBED LAND FOR THE SHORTEST PERIOD OF TIME;
   6.2. REMOVE SEDIMENT CAUSED BY ACCELERATED SOIL EROSION FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE;
   6.3. TEMPORARY OR PERMANENT CONTROL MEASURES SHALL BE DESIGNED AND INSTALLED TO CONVEY WATER AROUND, THROUGH OR FROM THE EARTH CHANGE AT NON–EROSIVE VELOCITIES;
   6.4. INSTALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN THESE MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION CONTROL MEASURES ARE IN PLACE AND STABILIZED; AND,
   6.5. COMPLETE PERMANENT SOIL EROSION CONTROL MEASURES FOR THE EARTH CHANGE WITHIN FIVE CALENDAR DAYS AFTER FINAL GRADING OR UPON COMPLETION OF THE FINAL EARTH CHANGE. IF IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE EARTH CHANGE, THEN MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IN PLACE AND THE AREA STABILIZED.
7. THE LANDOWNER (PERMITTEE), CONTRACTOR(S) AND ANY AGENT INVOLVED IN OBTAINING OR EXERCISING AND PERFORMING THE EARTH DISTURBANCE WORK AUTHORIZED BY THIS PERMIT, ARE ALL HELD RESPONSIBLE TO ENSURE THAT THE WORK IS PERFORMED IN ACCORDANCE WITH ALL APPROVED PLANS, SPECIFICATIONS AND CONDITIONS CONTAINED AND PERMITTED HEREIN; PRIOR TO INITIATING EARTH DISTURBANCE AUTHORIZED HEREIN, THE PERMITTEE IS REQUIRED TO PROVIDE A COPY OF THE PERMIT AND APPROVED SESC PLAN TO ANY CONTRACTOR(S) AND AGENTS INVOLVED WITH EARTH DISTURBANCE WORK. THE CONTRACTOR(S) AND AGENTS ARE REQUIRED TO PROVIDE A COPY OF THE PERMIT AND APPROVED SESC PLAN TO ALL SUBCONTRACTORS INVOLVED WITH EARTH DISTURBANCE WORK.
8. IF PROPERTY SUBJECT TO THIS SOIL EROSION AND SEDIMENTATION CONTROL PERMIT IS TRANSFERRED, THE PERMIT, INCLUDING ALL PERMIT OBLIGATIONS AND CONDITIONS, ARE TRANSFERRED WITH THE PROPERTY ALONG WITH THE RESPONSIBILITY FOR ANY VIOLATIONS OF THE PERMIT THAT EXIST ON THE DATE OF THE TRANSFER OF THE PROPERTY. IF A PARCEL OF THE PROPERTY, BUT NOT THE ENTIRE PROPERTY IS TRANSFERRED, THE PERMIT OBLIGATIONS AND CONDITIONS WITH RESPECT TO THAT PARCEL ARE TRANSFERRED, BUT NOT THE PERMIT, ALONG WITH THE RESPONSIBILITY FOR ANY VIOLATIONS OF THE PERMIT WITH RESPECT TO THAT PARCEL THAT EXIST ON THE DATE OF THE TRANSFER OF THE PARCEL. NOTICE OF PROPERTY OR PARCEL TRANSFERS SHALL BE SUBMITTED TO THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE PRIOR TO TRANSFER AND SHALL OTHERWISE BE IN COMPLIANCE WITH MCL 324.9112. MAINTENANCE RESPONSIBILITIES SHALL BECOME PART OF ANY SALES AGREEMENTS FOR THE LAND ON WHICH THE PERMANENT SESC MEASURES ARE LOCATED.
9. THE PERMIT WILL NOT BE CLOSED UNTIL ALL EARTH DISTURBANCE IS STABILIZED AND THE TEMPORARY MEASURES HAVE BEEN REMOVED.

BY	DESCRIPTION	DATE
AJI	FOR SITE PLAN REVIEW AND PERMITS	7/12/21
AJI	60% SET	06/16/21
SEP	REVISIONS/SUBMITTALS	

LSG Engineers & Surveyors
STATE OF MICHIGAN – ALAN D. BOYER – ENGINEER – No. 32017 – REGISTERED PROFESSIONAL ENGINEER
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393–2902
FAX (517) 393–2608
www.lsg–es.com

PREPARED FOR:
Gestamp
200 EAST KIPP ROAD
MASON, MICHIGAN 48854
PHONE # (517) 244–8800

WIELAND
4162 ENGLISH OAK DRIVE
LANSING, MICHIGAN 48911
PHONE # (517) 372–8650

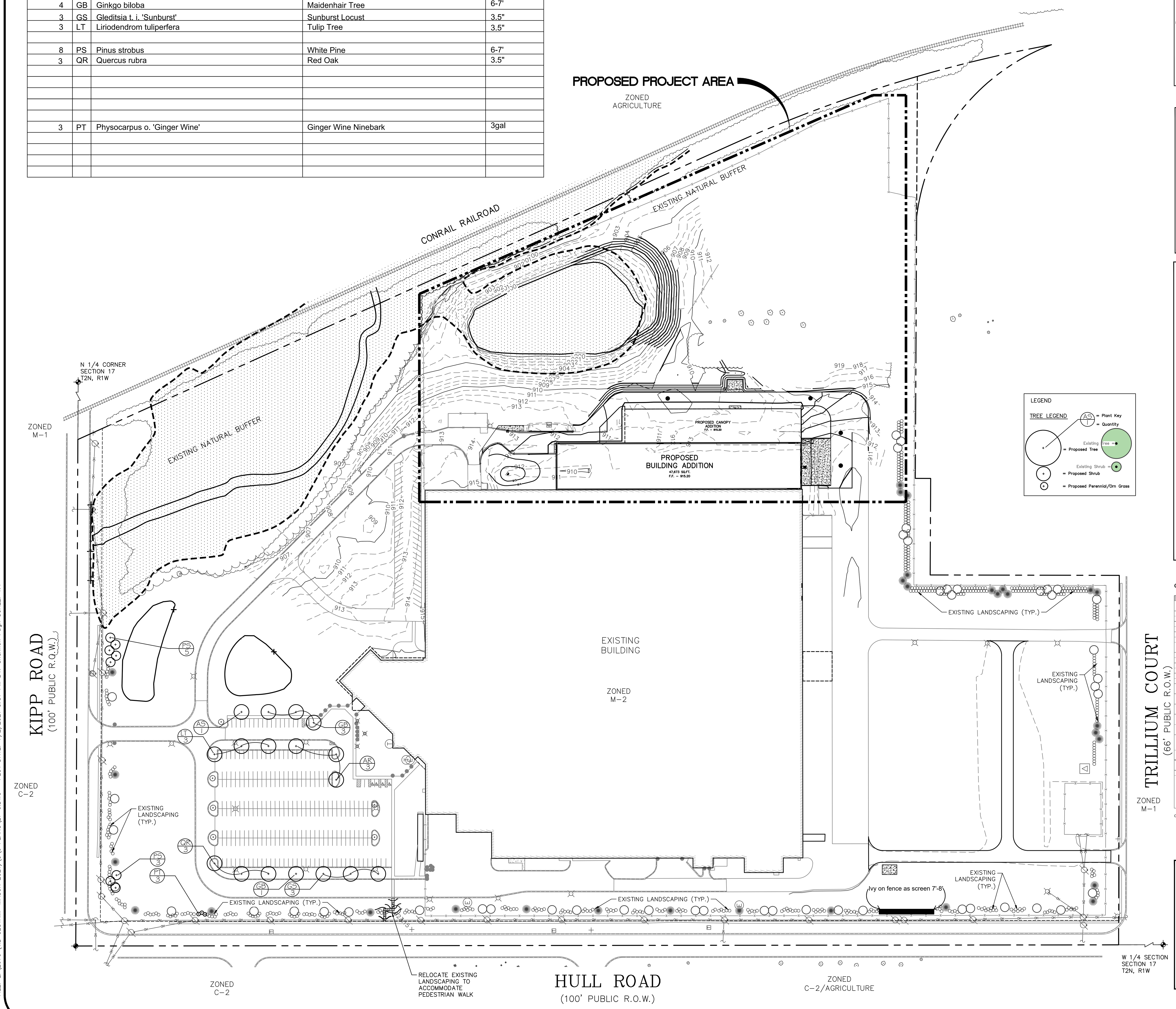
SOIL EROSION AND SEDIMENTATION CONTROL NOTES
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

MISS DIG 811 Know what's below. Call before you dig.

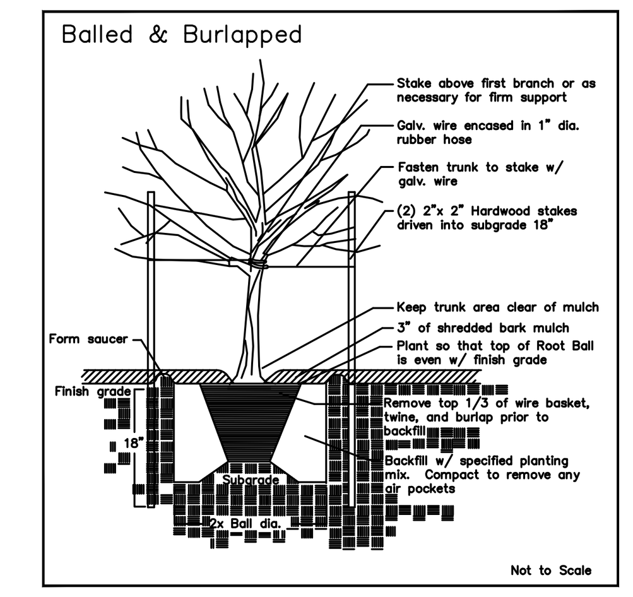
FILE C7–2.DWG
DESIGNED BY ADB
DRAWN BY AJI
CHECKED BY ADB
DATE MAY 24, 2021
SCALE
HOR. N/A
VERT. N/A
PROJECT NO. 2679
SHEET NO. C7.2

Plant List

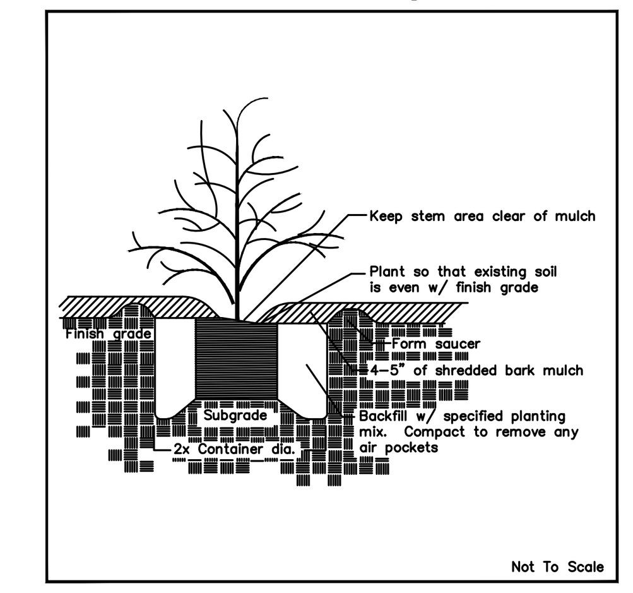
Quantity	Key	Botanical	Common	Size
3	AR	Acer rubrum 'October Glory'	October Glory Red Maple	3.5"
1	AS	Acer saccharum 'Green Mountain'	Green Mountain Sugar Maple	3.5"
4	GB	Ginkgo biloba	Maidenhair Tree	6-7'
3	GS	Gleditsia t. i. 'Sunburst'	Sunburst Locust	3.5"
3	LT	Liriodendrom tuliperfera	Tulip Tree	3.5"
8	PS	Pinus strobus	White Pine	6-7'
3	QR	Quercus rubra	Red Oak	3.5"
3	PT	Physocarpus o. 'Ginger Wine'	Ginger Wine Ninebark	3gal

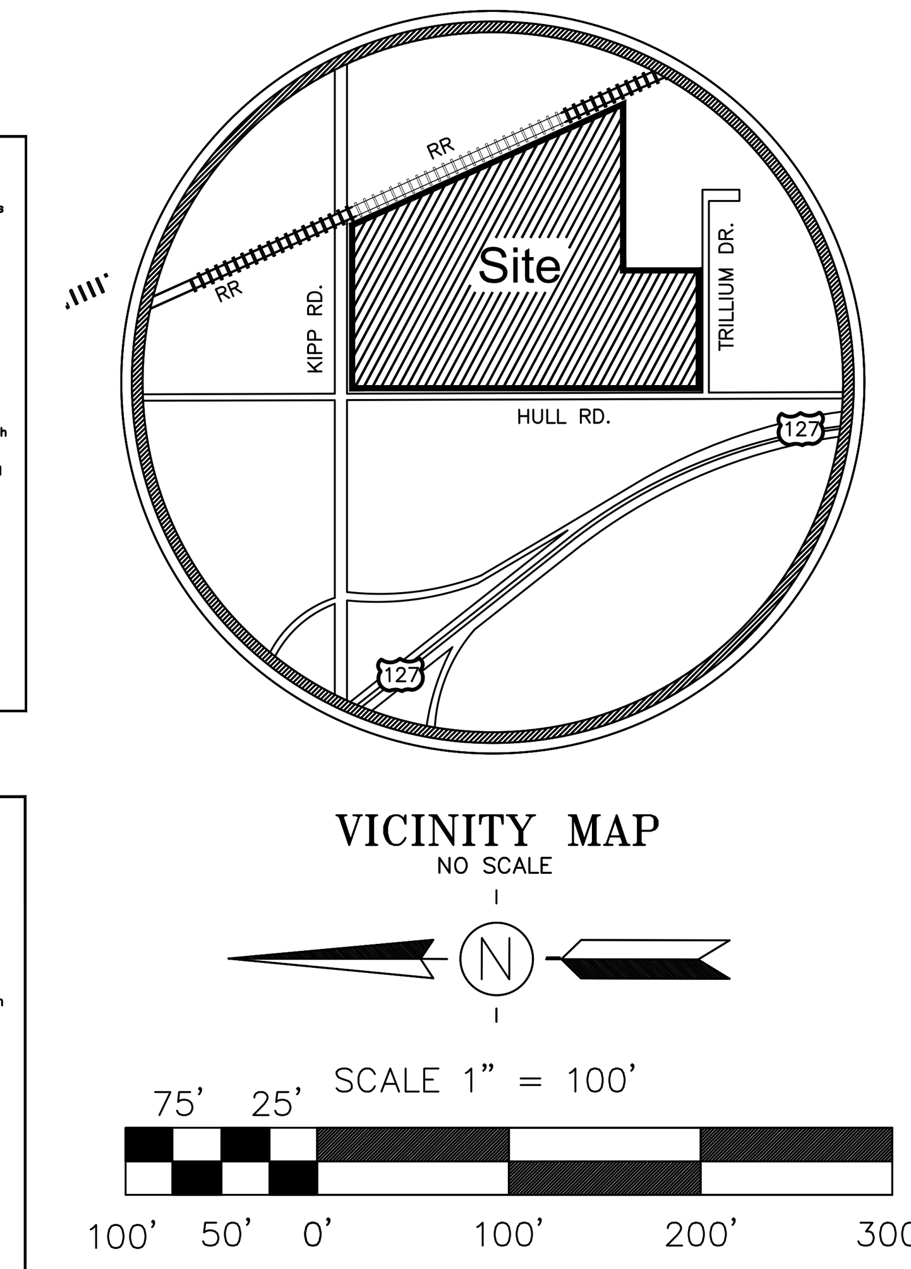


Tree Planting Detail



Shrub Planting Detail





Landscape Notes

1. Contractor shall verify the location of all underground utilities, pipes and structures, as well as the location of existing trees and vegetation. Contractor shall be responsible for any cost incurred due to damage/removal of said elements.
2. Any discrepancies between plans, notes, details and existing conditions shall be immediately reported to the owner's authorized representative for review and decision. Contractor shall assume full responsibility for all revisions due to failure to give such notification.
3. Contractor is responsible for any damage to existing materials/improvements damaged during construction.
4. Site boundary, topography, utilities and other base information provided by others.
5. Contractor shall verify quantities shown on plant schedules and those indicated on plans. Contractor is responsible for installation of quantities drawn.
6. Contractor shall make minor adjustments to plant material locations in field as necessary. The location of all plant material shall be subject to approval by the owners authorized representative.
7. All plant material shall be of the sizes called for in the plant schedules. Any plant material not meeting the size and/or quality as called for shall be removed from site. All trees shall be inspected and approved by the owner's authorized representative. No substitutions of plant materail shall be made without approval from the owner's authorized representative.
8. All planting beds to be treated with pre-emergent herbicide. Contractor shall insure that proposed plant material is resistant to the herbicide properties and that herbicide application follows the manufacturer's specifications and is applied in accordance with sound horticultural practices.
9. Contractor shall determine appropriate planting mixes (based on soils/subsurface conditions) and review alternativeswith owner's representative prior to installation.
10. All plant beds and maintenance edges around structure will be mulched with washed Michigan Stone (2"dia) over commercial weed barrier. All plants will have a small ring of shredded hardwood bark mulch 3"-4" deep over the root system as specified.
11. If lawn is to be sodded, us a locally grown Kentucky Bluegrass variety that is free of weeds.
12. Seed lawn areas with the following mixture:
    - 25% Sybsport Kentucky Bluegrass
    - 25% Nassam Kentucky Bluegrass
    - 25% Sybsport Kentucky Bluegrass
    - 10% Perennial Rye Grass

    Apply seed at the rate of 7-8lbs/1000sqft
13. Commercial Grade Plastic Edge will be Edg-King from Oly-Ola, Inc., (or better)
14. Plant material installed for a perimeter landscape screen shall be placed in a planting bed at least 8'-wide, shall be at least 2'-high at the initial planting, be expected to grow to a height of at least 3' in the front yard, 5' in the side yard and 8' in the rear yard, within two (2) years of planting.

GESTAMP MASON **SITE DATA**

Item		Required	Existing	Proposed
Min Lot Size		60,000 sf	59.40 Ac* (2,587,450± sf)	59.40 Ac* (2,587,450± sf)
Min. Lot Width		200	1,033±	1,033±
Min. Lot Area per Prin. Struct.		-	N/A	N/A
Front Yard Setback (Kipp Rd) North		60	486	486
Setback (Hull Rd Side) West		20	98	98
Setback (Trillium Rd. Back) South		20	262	231
Setback (RR side) East		20	385	385
Max. Lot Coverage by Structures		50%	24.1% (Bldg 624,780 sf)	26.0% (Bldg 673,980 sf)
Max. Height Principal Structure		45	42	42
Max. Height Accessory Structure		45	N/A	N/A
Min. Floor Area per DU		-	N/A	N.A
Min. Width Principal Structure		-	N/A	N/A
Min. Internal Height Principal Structure		-	N/A	N/A
Landscaping Buffers	Buffer Length**			
M2 to M1 Buffer B (Kipp Rd) (Min. 10' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	425 (screen)	15 trees 43 shrubs	Natural buffer across the floodplain of Sycamore Creek	Natural buffer across the floodplain of Sycamore Creek
M2 to C2 Buffer C (Kipp Rd) (Min. 30' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	565 (screen)	19 trees 113 shrubs	8 trees+ 92 shrubs+	8 Exist + 8 Prop = 16 92 Existing
M2 to C2 Buffer C (Hull Rd) (Min. 30' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	985 (berm)	33 trees 99 shrubs	16 trees+ 134 shrubs+	16 Existing 134 Exist + 3 Prop = 137
M2 to AG Buffer D (Hull Rd) (Min. 50' wide, 1 tree per 20 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	1065 (berm)	54 trees 107 shrubs	15 trees+ 106 shrubs+	15 Exist 106 Exist
M2 to M1 Buffer B (Trillium) (Min. 10' wide, 1 tree per 30 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	2095 (berm)	70 trees 210 shrubs	40 trees+ 226 shrubs+	40 Exist 226 Exist
M2 to AG Buffer D (RR to east) (Min. 50' wide, 1 tree per 20 feet, 1 shrub per 10' of berm, 4 shrub per 20' of screen)	1790 (screen)	90 trees 358 shrubs	Natural buffer of undeveloped land, the railroad and Sycamore Creek between the land uses	Natural buffer of undeveloped land, the railroad and Sycamore Creek between the land uses
Landscaping Interior (1 canopy tree and 100 sf landscape area per 8 spaces with ½ of trees in the interior)		41 trees 4137 sf	5 trees+ 15,140 sf	5 Exist + 17 Prop = 22 15,140 sf
Parking (0.33 per 100 sf UFA)		Approx. 100,000 sf UFA (office + manufacturing floor)	331	331
Loading/Unloading (1 per 20,000 sf)		31 spaces	11 (estimated)	11 Exist (est) + 6 Prop = 17

Footnotes:
* Parcel acreage less the road right-of-way.
**Buffer length measurements made from Ingham County Parcel Viewer.
\+ Existing tree and shrub counts were made on the ground. Volunteer plants and dead plants were not counted.
Proposed landscaping is intended to fill voids within the existing landscaping screens previously approved by the City of Mason.
Lot coverage percentage taken from plans by ENG for the existing condition and the LSG Site Plan for the proposed condition.
Setback measurements made from the Site Plan drawing by LSG.

Compiled by LSG Engineers & Surveyors for SPR and SLU review purposes.

Outdoor Living, Inc.
2720 Alpha Access
Lansing, MI 48910
Phone:
(517) 484-0230

STATE OF MICHIGAN
TIMOTHY ILE BANFIELD
LANDSCAPE ARCHITECT
No. 859
REGISTERED LANDSCAPE ARCHITECT

Seal: Timothy I. Banfield PLA ASLA
LIC #3901000859

MISS DIG 811
Know what's below. Call before you dig.

DATE	DESCRIPTION	BY
7/2/21	FOR SITE PLAN REVIEW AND PERMITS	SEP
06/16/21	60% SET	AJI

REVISIONS/SUBMITTALS

LSG Engineers & Surveyors
3135 PINE TREE ROAD
SUITE D
LANSING, MI 48911
PH. (517) 393-2902
FAX (517) 393-2608
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LANDSCAPE PLAN
FOR
GESTAMP 2021 EXPANSION
200 EAST KIPP ROAD
MASON, MI 48854

FILE	L1-0.DWG
DESIGNED BY	ADB
DRAWN BY	AJI
CHECKED BY	ADB
DATE	MAY 24, 2021
SCALE HOR.	1"=100'
VERT.	1"=100'
PROJECT NO.	2679
SHEET NO.	L1.0

FILE: L:\2679 (WB GESTAMP MASON 2021)\C\6 PLANS\L1-0.DWG - PLOT DATE: 7/2/2021 3:57 PM BY: Shannon Pugh SCALE: 1:1

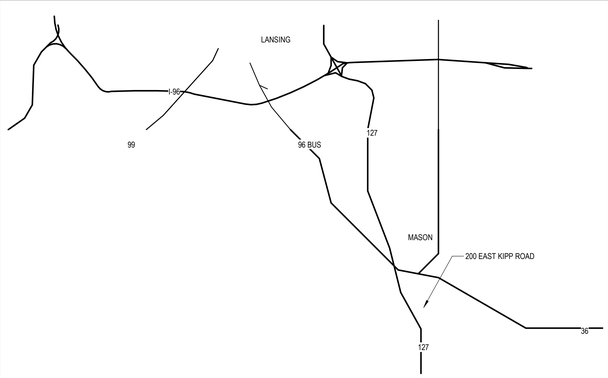
MASON, MICHIGAN
GHU_2021_EXPANSION
FINISH GOODS PRODUCT STORAGE (LOW BAY)

200 EAST KIPP ROAD
MASON, MI 48854

SHEET INDEX

NUMBER	TITLE	06/25/21 ISSUED FOR PERMITS
GENERAL		
TS	TITLE SHEET	X
ARCHITECTURAL		
A2.0	COMPOSITE LIFE SAFETY PLAN	X
A2.1	ADDITION FLOOR PLAN AND DETAILS	X
A3.0	ADDITION ROOF PLAN AND DETAILS	X
A4.0	BUILDING ELEVATIONS AND SECTIONS	X
A5.0	WALL SECTIONS	X
A5.1	WALL SECTIONS	X
A9.0	DOOR SCHEDULE AND DETAILS	X
STRUCTURAL		
S0.0	GENERAL NOTES	X
S2.0	ADDITION FOUNDATION PLAN	X
S3.0	ADDITION FRAMING PLAN	X
S4.0	FRAMING ELEVATIONS	X
S5.0	FOUNDATION SECTIONS AND DETAILS	X
S5.1	FOUNDATION SECTIONS AND DETAILS	X
MECHANICAL		
M0.0	GENERAL NOTES	X
M3.0	HVAC DUCT FLOOR PLAN	X
ELECTRICAL		
E0.0	GENERAL NOTES	X
E3.0	LIGHTING PLAN & PHOTOMETRIC	X
E4.0	POWER PLAN	X

LOCATION MAP



CONTACT INFORMATION

OWNER / CLIENT:
GESTAMP
200 KIPP ROAD
MASON, MI 48854

JEFF BOWLING
FACILITIES AND EQUIP. ENG.
PHONE: (517) 575-8020
EMAIL: JBOWLING@US.GESTAMP.COM

ARCHITECT / ENGINEER:
C. MILLER PE, CEM
PROJECT MANAGER

PHONE: (800) 752-5170
EMAIL: CMILLER@KIBBE.COM
WEB: www.kibbe.com

I. DZIRNIS AIA, LEED AP BD+C
PROJECT ARCHITECT

PHONE: (800) 752-5170
EMAIL: BDZIRNIS@KIBBE.COM

CODE AUTHORITY:
CITY OF MASON BUILDING DEPARTMENT
201 W ASH STREET
MASON, MI 48854
(517) 676-9155

ELIZABETH A HUDE
COMMUNITY DEVELOPMENT DIRECTOR

811 Know what's **below.** **Call** before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2015 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2015 INTERNATIONAL FIRE CODE (IFC)
- 2018 NFPA 1 FIRE CODE (FC)
- 2018 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP F-1 - MODERATE-HAZARD FACTORY INDUSTRIAL
- GROUP S-2 - LOW-HAZARD STORAGE

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- GROUP F-1 - ALLOWABLE - 75' -(3) STORIES
- GROUP F-1 - PROPOSED - 32'-(1) STORY
- GROUP S-2 - ALLOWABLE - 75'-(4) STORIES
- GROUP S-2 - PROPOSED -28'-(1) STORY

UNLIMITED AREA BUILDINGS [TBL 507]
- AREA OF B, F, M, OR S - BUILDING NOT LIMITED WHEN NO MORE THAN ONE STORY, PROVIDED WITH AUTOMATIC SPRINKLER SYSTEM AND SURROUNDED BY PUBLIC WAY NOT LESS THAN 60 FEET IN WIDTH (ANY TYPE OF CONSTRUCTION)

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB - UNPROTECTED NON-COMBUSTIBLE

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

EXTERIOR WALLS [SECTION 705]
- NON-COMBUSTIBLE TYPE IIB CONSTRUCTION

WALLS AND CEILING FINISHES [SEC 803, TBL 803.11]
FLAME SPREAD INDEX - CLASS A(0-25), CLASS B(26-75), CLASS C(76-200)
SMOKE DEVELOPED INDEX - CLASS A(0-450), CLASS B(0-450), CLASS C(0-450)
- CLASS C - INTERIOR EXIT STAIRWAYS, RAMPS, EXIT PASSAGES
- CLASS C - CORRIDORS, ENCL. FOR EXIT ACCESS STAIRS, RAMPS
- CLASS C - ROOMS AND ENCLOSED SPACES

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- BUILDING IS FULLY SPRINKLER PROTECTED
- NFPA 13 SPRINKLER SYSTEM

PORTABLE FIRE EXTINGUISHERS [SEC 906]
- CLASS A, 75' - TYPE 2A EXTINGUISHERS
- SEE ALSO IFC SECTION 2311.6

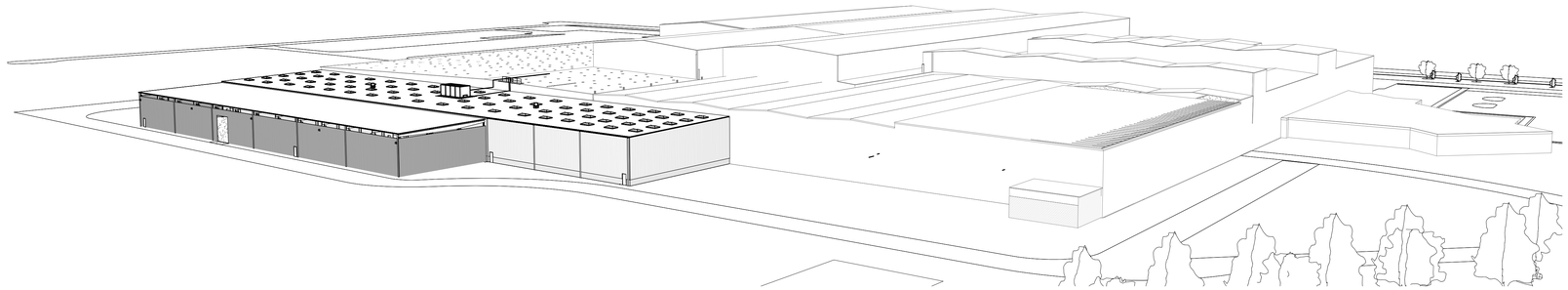
OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- GROUP F-1 - 47,500/100 = 475 OCCUPANTS
- GROUP S-2 - 24,720/300 = 83 OCCUPANTS
- TOTAL = 558 OCCUPANTS

MEANS OF EGRESS SIZING [SEC 1005]
- OCCUPANT LOAD 558 X .15 = 84" MIN WIDTH
- REQUIRED EXIT DOORS @ 33"/DR = 3
- DOORS PROVIDED - 5

NUMBER OF EXITS AND EXIT ACCESS DOORWAYS [SEC 1006]
- REQUIRED 3 OCCUPANT LOAD = 501-1,000

EXIT ACCESS TRAVEL DISTANCE [SEC 1017, TBL 1017.2]
- USE GROUP F-1 W/ SPRINKLERS
  - 250'
- USE GROUP S-2 W/ SPRINKLER SYSTEM
  - 400'

CORRIDORS [SEC 1020, TBL 1020.1]
- 0 HR RATING W/ SPRINKLERS



STATE OF MICHIGAN — CHRISTOPHER D. MILLER — ENGINEER — 6201060328 — REGISTERED PROFESSIONAL ENGINEER

STATE OF MICHIGAN — IVARS ULDIS DZIRNIS — ARCHITECT — No. 1301033291 — LICENSED ARCHITECT

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FINISH GOODS PRODUCT STORAGE (LOW BAY)
MASON, MI 48854

TITLE SHEET

DATE: 06/25/21

STATUS / REVISIONS: ISSUED FOR PERMITS

NO.

CHECKED BY: C. MILLER
DESIGNED BY: E. FREDERICK
DRAWN BY: S. FISHER
SCALE: AS SHOWN
PROJ #: 211697049
DATE: 06/25/21

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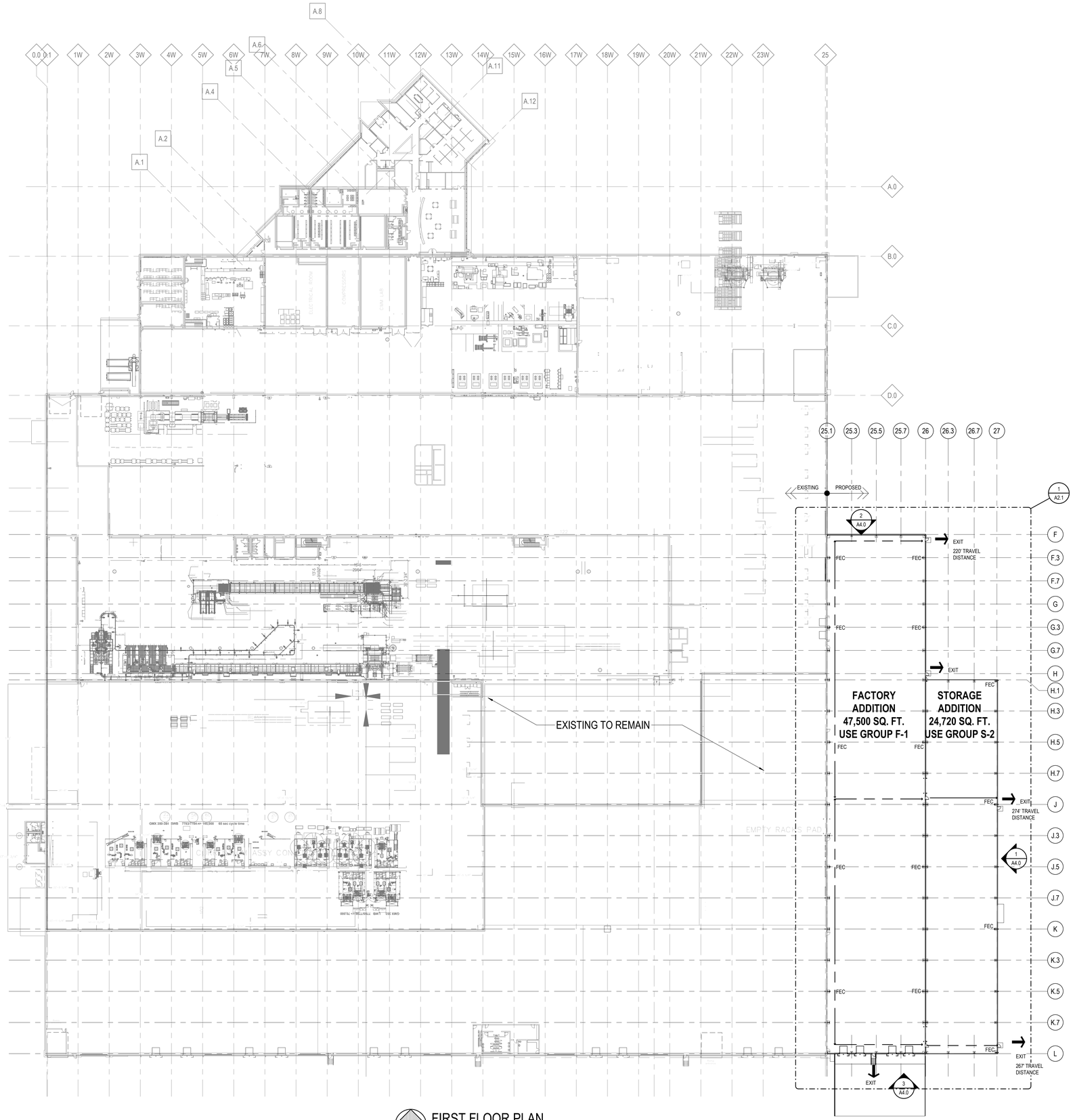

FIRST FLOOR PLAN
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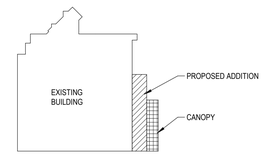

KEY PLAN

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COMPOSITE LIFE SAFETY PLAN

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DRAWN BY: S. FISHER
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DATE: 06/25/21

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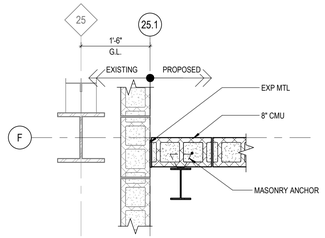

2 / A2.1 PLAN DETAIL LOW
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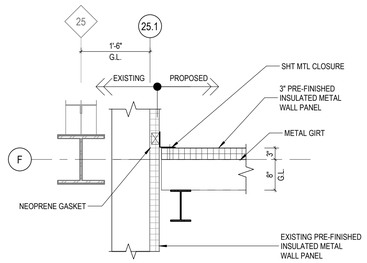

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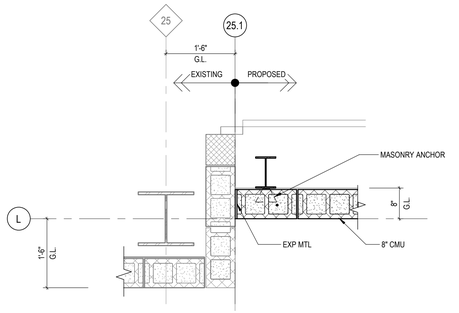

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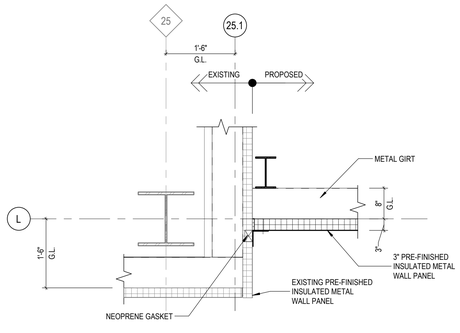

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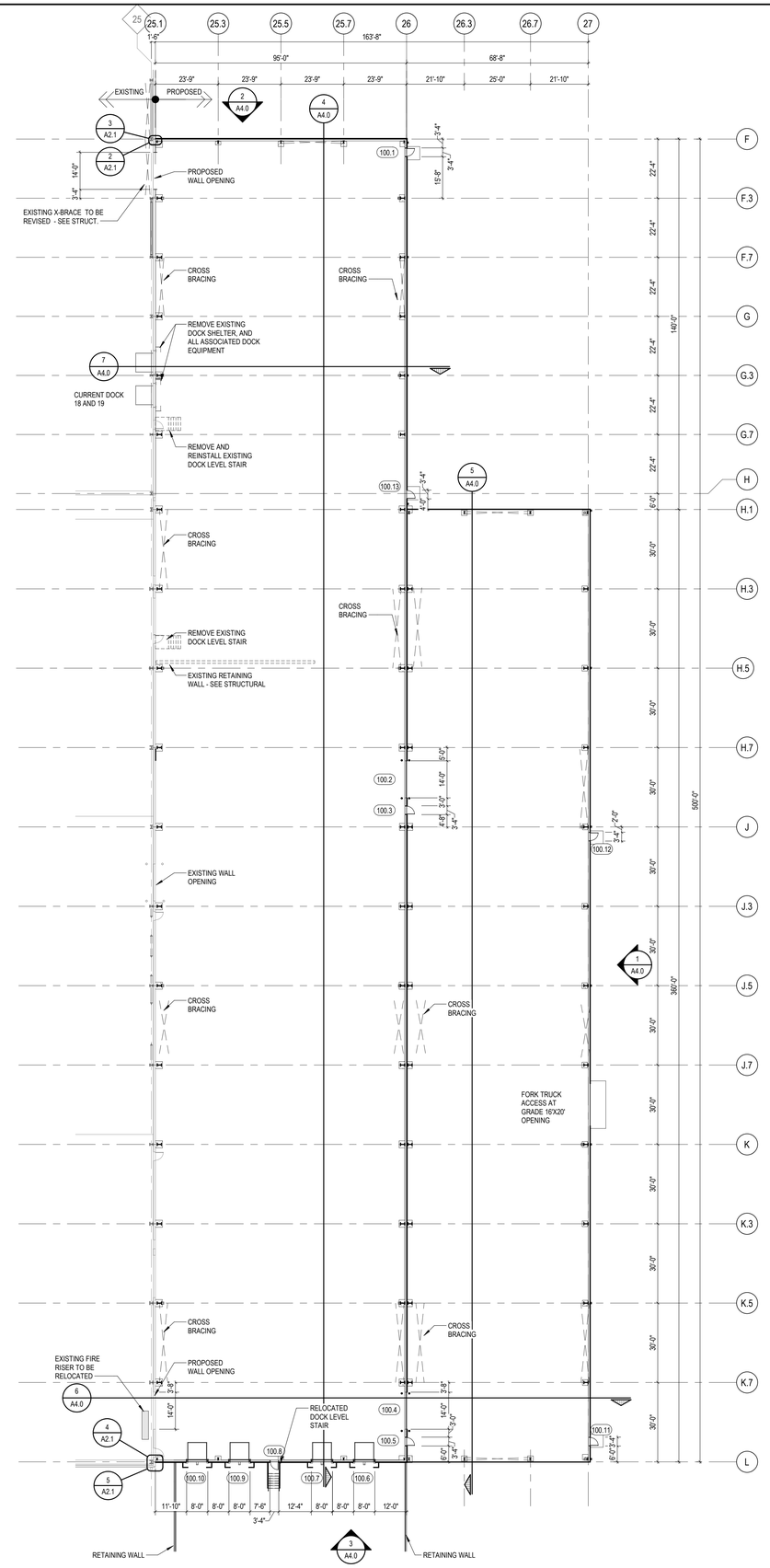


N 1 / A2.1 ADDITION FLOOR PLAN
SCALE: 3/64" = 1'-0"

SYMBOL LEGEND

SYMBOL	DESCRIPTION
1	WALL PARTITION TYPE
1	WINDOW TYPE
ii	DEMOLITION NOTE
ii	CONSTRUCTION NOTE
101	DOOR NUMBER
	EXTERIOR ELEVATION REFERENCE
	INTERIOR ELEVATION REFERENCE
1" / 0"	DIRECTION OF SLOPE
	SECTION REFERENCE
	DETAIL REFERENCE
ii	EXISTING COLUMN LINE
ii	NEW COLUMN LINE

MATERIAL LEGEND

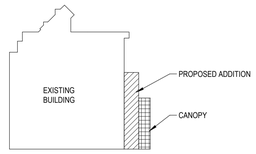
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	METAL PANEL		RIGID INSULATION
	CMU		PLYWOOD
	CONCRETE		STEEL
	GYP BOARD		WOOD
	EARTH		BATT INSULATION

GENERAL NOTES

1. GENERAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID ON THIS PROJECT TO BECOME FAMILIAR WITH EXISTING CONDITIONS. ANY EXISTING CONDITIONS FOUND AT VARIANCE WITH THE DRAWINGS MUST BE IMMEDIATELY REPORTED TO THE OWNER'S PROJECT REPRESENTATIVE.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT APPLICABLE CODES, ORDINANCES AND STANDARD SPECIFICATIONS OF ALL LOCAL GOVERNING AGENCIES HAVING JURISDICTION.
3. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED FOR CONSTRUCTION OF THIS PROJECT.
4. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES IT SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION.
5. THE CONTRACTOR WILL BE HELD SOLELY LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY ITS FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
6. ALL WORK SHALL BE GUARANTEED BY THE CONTRACTOR TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS AND IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPLACE OR REPAIR ANY WORK OR MATERIAL FOUND TO BE DEFECTIVE UPON WRITTEN NOTICE FROM OWNER'S PROJECT REPRESENTATIVE. FOR A PERIOD OF 1 YEAR FROM DATE OF WRITTEN ACCEPTANCE FROM OWNER'S PROJECT REPRESENTATIVE, AND FOR A PERIOD OF 2 YEARS FOR PAVEMENTS.
7. THE CONTRACTOR SHALL CONFINE ITS ACTIVITIES TO THE PROJECT SITE UNDER DEVELOPMENT OR THE EXISTING RIGHT OF WAYS, CONSTRUCTION AND PERMANENT EASEMENTS, AND SHALL NOT TRESPASS UPON OTHER PRIVATE PROPERTY WITHOUT THE CONSENT OF THE OWNER.
8. ALL CONSTRUCTION METHODS AND OPERATIONS SHALL BE PERFORMED IN SUCH A MANNER AS TO PROTECT ALL ADJACENT BUILDING ELEMENTS. ANY ELEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE SOLE EXPENSE OF THE CONTRACTOR.

ABBREVIATIONS

@	AT
A.C.T.	ACOUSTICAL CEILING TILE
A.F.F.	ABOVE FINISHED FLOOR
ADJ	ADJACENT
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
ASSBLY	ASSEMBLY
B.F.	BARRIER FREE
BLKG	BLOCKING
BRG	BEARING
BTWN	BETWEEN
C.B.	CATCH BASIN
C.T.	CERAMIC TILE
CABS	CABINETS
CJ	CONTROL JOINT
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINOUS
C. TOP	COUNTERTOP
CPT	CARPET
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
E.J.	EXPANSION JOINT
EA	EACH
ELEV	ELEVATION
E.T.R.	EXISTING TO REMAIN
EX	EXISTING
F.E.C.	FIRE EXTINGUISHER CABINET
F.V.	FIELD VERIFY
FDN	FOUNDATION
FIN	FINISH
FLR	FLOOR
GA	GAUGE
GALV	GALVANIZED
GYP	GYPSUM, GYPSUM DRYWALL
GYP BD	GYPSUM BOARD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
INSUL	INSULATION
LOC	LOCATION(S)
LT	LIGHT
LVT	LUXURY VINYL TILE
M.T.	MARBLE THRESHOLD
MAS	MASONRY
MATL	MATERIAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MIN	MINIMUM
MTL	METAL
MTD	MOUNTED
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NONCOMB	NONCOMBUSTIBLE
O.C.	ON CENTER
O.H.	OVERHANG
PNL	PANEL
P.LAM	PLASTIC LAMINATE
PRE-FIN	PRE-FINISH(ED)
P.T.	PORCELAIN TILE
PLYWD	PLYWOOD
SIM	SIMILAR
SLD SURFC	SOLID SURFACE
S.S.	STAINLESS STEEL
STR	STRUCTURAL
S.A.P.	SUSPENDED ACOUSTICAL PANEL
S.A.T.	SUSPENDED ACOUSTICAL TILE
SCHD	SCHEDULE
SIM	SIMILAR
SHTHG	SHEATHING
T.O.	TOP OF
TYP	TYPICAL
U.G.	UNDERGROUND
U.N.O.	UNLESS NOTED OTHERWISE
V.B.	VAPOR BARRIER
V.I.F.	VERIFY IN FIELD
VCT	VINYL COMPOSITION TILE
WDW	WINDOW
W/	WITH
WD	WOOD



N KEY PLAN

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ADDITION FLOOR PLAN AND DETAILS

NO.	STATUS / REVISIONS	DATE
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DRAWN BY: S. FISHER
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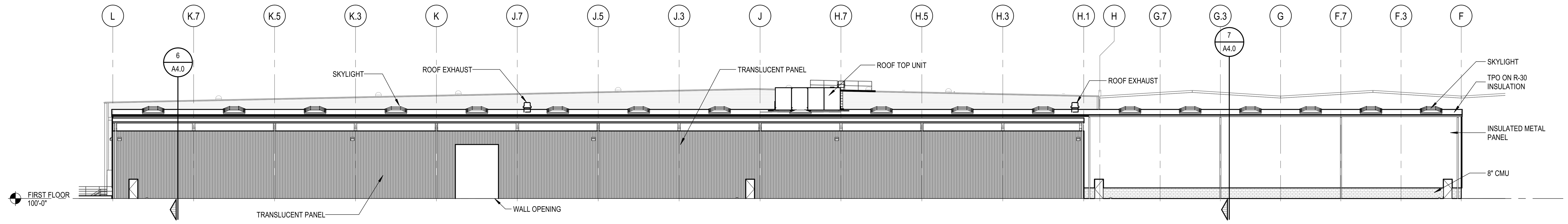
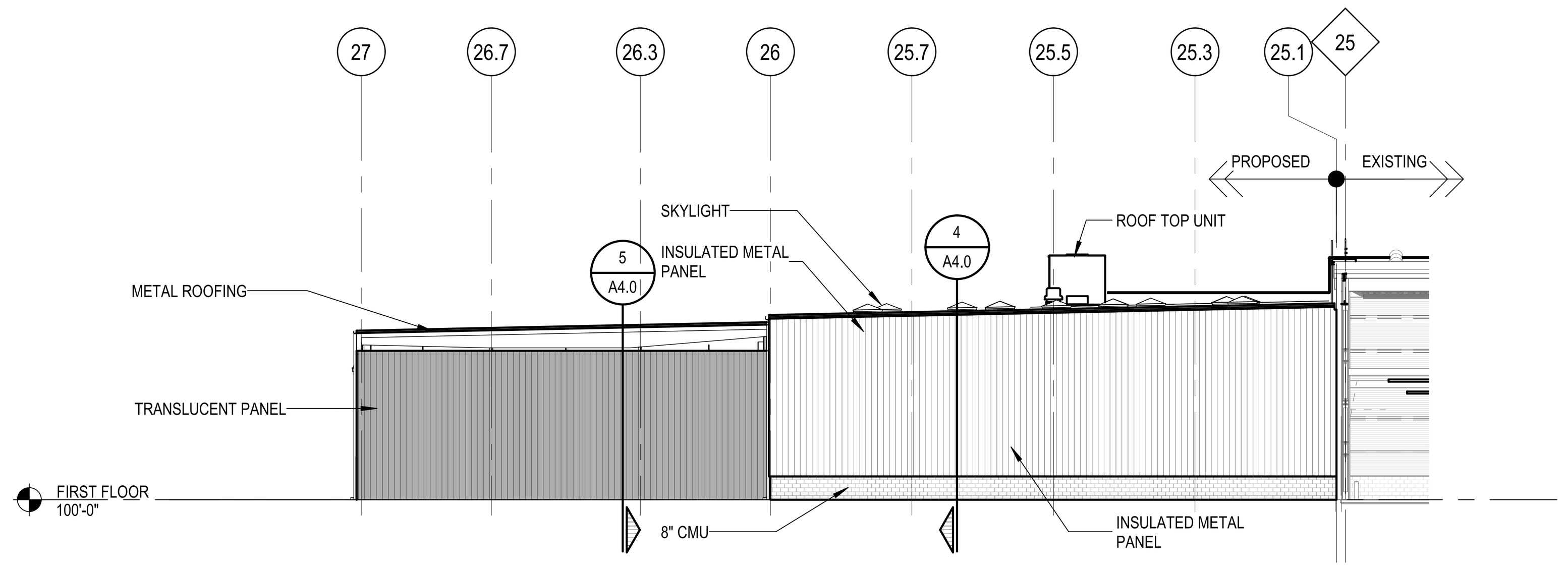


1 A4.0 EAST ELEVATION
SCALE: 3/64" = 1'-0"



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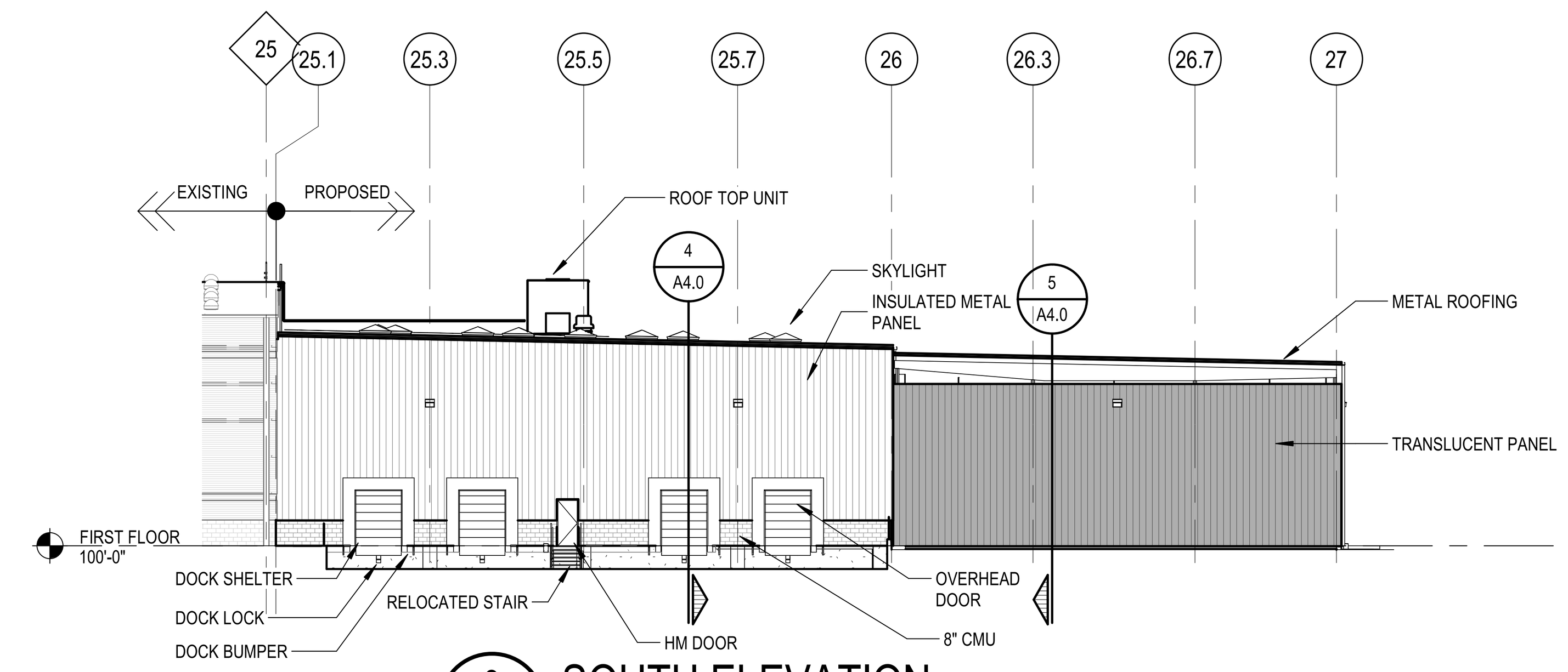

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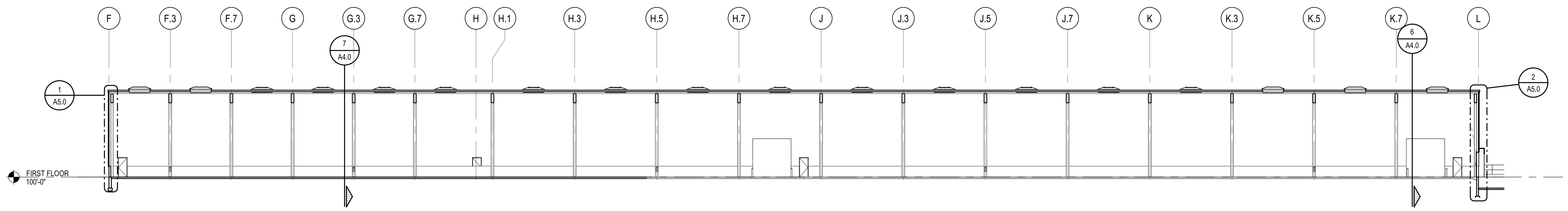

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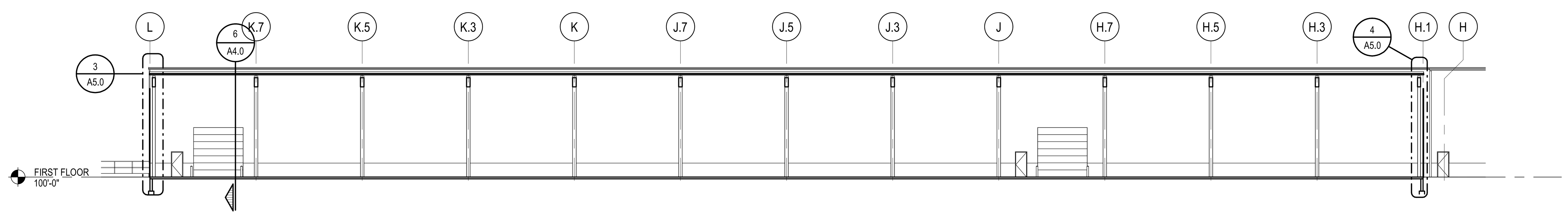

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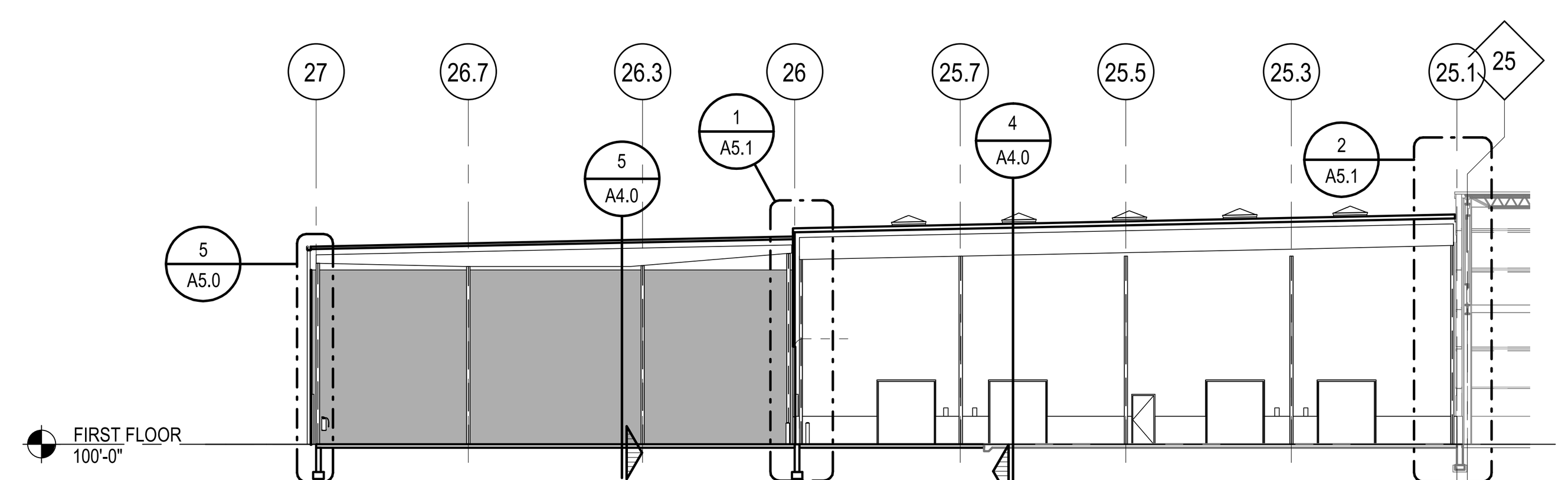

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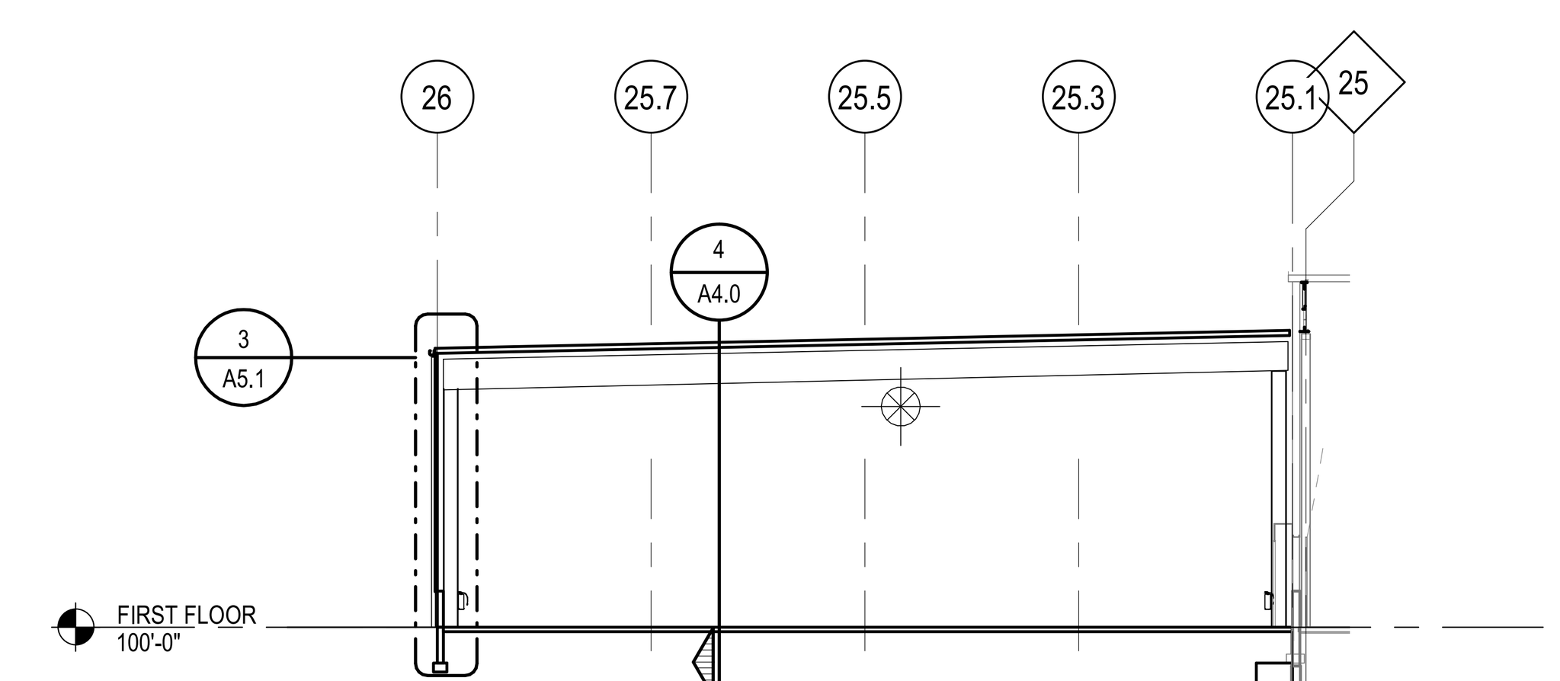

7 A4.0 BUILDING SECTION
SCALE: 3/64" = 1'-0"

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MASON, MI 48854

BUILDING ELEVATIONS AND SECTIONS

NO.	STATUS / REVISIONS	DATE
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S. FISHER
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DATE: 06/25/21

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Professional Service Industries, Inc.
3120 Sovereign Dr, Suite C
Lansing, Michigan 48911
Phone: (517) 394-5700

August 22, 2019

Mr. Jeff Bowling, Program Launch Facilities Engineer
Gestamp Mason
200 East Kipp Road
Mason, Michigan 48854

RE: Geotechnical Exploration and Engineering Report
Proposed GESTAMP Mason WL Expansion
200 East Kipp Road
Mason, Michigan 48854
PSI Report **No. 0406-413**

Dear Mr. Bowling,

As requested, PSI has developed a geotechnical engineering report for the referenced project. The results of this exploration, together with our recommendations, are presented in the accompanying report, a copy of which is being transmitted herewith.

After plans and specifications are complete, PSI should review the final design and specifications to verify that the earthwork recommendations are properly interpreted and implemented. **It is considered imperative that PSI's geotechnical engineer and/or its representative be present during earthwork operations to observe the field conditions with respect to the design assumptions and specifications.** PSI will not be responsible for interpretations and field quality control observations made by others. Scheduling for our nearest Construction Materials Testing and Inspection location in Kalamazoo, Michigan is available at (517) 394-5700.

PSI appreciates the opportunity to provide geotechnical engineering and consulting services for your project and looks forward to working with you during the construction phase. PSI provides additional services, which include construction materials testing and observation services, environmental services, roof consulting and observation services, pavement and asphalt testing services and specialty engineering and testing. If you have any questions regarding this report, or if we may be of further service, please feel free to contact this office at your convenience.

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Branch Manager
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Mahmoud E. El-Gamal, Ph.D., P.E.
Principal Consultant
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GEOTECHNICAL EXPLORATION AND ENGINEERING REPORT

FOR THE:
PROPOSED GESTAMP MASON WL EXPANSION
200 EAST KIPP ROAD
MASON, MICHIGAN 48854

PREPARED FOR:

GESTAMP MASON LLC.
200 EAST KIPP ROAD
MASON, MICHIGAN 48854

PREPARED BY:

PROFESSIONAL SERVICE INDUSTRIES, INC.
3120 SOVEREIGN DRIVE, SUITE C
LANSING, MICHIGAN 48911

AUGUST 22, 2019

PSI PROJECT NO. 0406-413

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TABLE OF CONTENTS

APPENDIX

PROJECT INFORMATION

Project Authorization

This engineering report presents the results of our geotechnical engineering exploration performed relative to the proposed WL Expansion at the GESTAMP Mason, LLC facility located at 200 East Kipp Road, in Mason, Michigan.

This exploration was performed for GESTAMP Mason LLC. in accordance with PSI Proposal No. 284799-R1 dated July 23, 2019. The proposal included a proposed scope of services, estimated cost, unit rates, and time schedule. Authorization to perform this exploration and analysis was in the form of an acceptance of GESTAMP Purchase Order No. 4910001700, dated July 29, 2019.

Project Description

Project information was provided by GESTAMP Mason LLC. via email. The correspondence included the following:

- Request for Proposal including Scope of Work;
- Aerial map (Google Maps) of project site;
- Boring Location Map;
- Project Site Plan.

Briefly, PSI understands that GESTAMP Mason, LLC is planning the construction of two additional structures at the existing facility located at 200 East Kipp Road, in Mason, Michigan. The proposed buildings will be industrial structures of steel frame and slab on grade construction measuring approximately 78,240 and 15,000 square feet in plan area.

PSI further understands that finished floor elevations of the proposed building additions will be established at elevation 915.5 feet. Accordingly, PSI anticipates approximately 4 feet of cut/fill may be required to achieve the proposed building's finished floor elevation (exclusive of any additional cut/fill associated with removal of unsuitable soil sections).

The geotechnical recommendations presented in this report are based on the available project information and results of our geotechnical exploration. If any of the noted information is considered incorrect or is changed, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Purpose and Scope of Services

The purpose of this exploration was to evaluate the subsurface conditions at the site and to develop geotechnical design criteria for support of foundations and pavement for the planned project. The scope of the exploration and analysis included a reconnaissance of the project site, completion of ten (10) soil borings, field and laboratory testing of representative portions of the recovered samples, and an engineering analysis and evaluation of the subsurface materials encountered.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air on, below or around this site. Any statement in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Prior to the development of any site an environmental assessment is advisable.

As directed by the scope of work provided by GESTAMP Mason, LLC., PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminates in or around any structure or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. GESTAMP Mason, LLC acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. GESTAMP Mason, LLC. further acknowledges that site conditions are outside of PSI's control and that mold amplification will likely occur or continue to occur in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

PSI also provides an array of complementary environmental and industrial hygiene services to assist our clients in successfully assessing and developing properties such as the one referenced in this report. PSI's environmental consultants apply their experience, local geologic knowledge and thorough understanding of ASTM standards, environmental risk, and regulatory knowledge to conduct due diligence assessments of a wide range or property types and proposed developments.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The project site is at the existing GESTAMP Mason, LLC. facility, located at 200 East Kipp Road, in Mason, Michigan. The general site location is shown on the site location diagram in the Appendix as Figure No. 1.

At the time of our field exploration, the project site consisted of light grass cover and asphalt pavement associated with the existing facility. Terrain across the project site was relatively level with grades varying on the order of approximately four (4) feet according to Google Earth Pro. The ground surface of the project site was firm at the time of the field services as indicated by the fact that the drilling rigs experienced little difficulty in accessing to the boring locations.

Field Exploration and Laboratory Testing

The site subsurface conditions were determined by completion of ten (10) soil borings located within the proposed structure footprints advanced to depths ranging from twenty (20) to forty (40) feet below the existing ground surface. The boring locations and depths of the borings were established by GESTAMP Mason, LLC and were located in the field by PSI. The approximate boring locations are depicted on the Boring Location Diagram included in the Appendix.

The soil borings were performed between August 7, 2019 and August 15, 2019 by means of a CME-55 truck-mounted drilling rig equipped with a rotary head utilizing 3¼ inch hollow-stem augers to advance the boreholes. Representative soil samples were recovered employing split-barrel sampling procedures in general accordance with "Penetration Test and Split-Barrel Sampling of Soils" (ASTM D1586). After completion of the test borings the holes were backfilled with the excavated soils.

Determination of the ground elevations at the boring locations by survey was not within the scope of the project. Approximate elevations were obtained by using Google Earth Pro. Prior to the beginning of the construction, a field measurement at the boring location elevations should be performed by a professional land surveyor registered in the State of Michigan. References to depths in this report and on the attached Boring Logs are from the existing ground surface unless otherwise noted. In addition to the field exploration, a laboratory-testing program was conducted to evaluate engineering characteristics of the subsurface materials.

The laboratory-testing program included visual classification and moisture content tests on representative portions of the material recovered. The results of these tests are located on the boring logs which are included in the Appendix. Each phase of the laboratory testing program was conducted in general accordance with applicable ASTM specifications. The unused portion of the soil samples will be placed in storage at PSI's Lansing, Michigan facility. Unless otherwise requested in writing, the samples will be discarded after 60 days from the submission of the final report.

Subsurface/Surface Conditions

The surface and subsurface conditions encountered at the project site at the time of our field exploration are summarized in the table below:

Table 1: Existing Surface/Subsurface Conditions

Soil Boring	Depth	Surficial Materials and Approximate Thickness	Major Native Soils
SB-01	20’	4½” Topsoil 3’ 7½” Clayey Sand (FILL) *Total Thickness: 4’*	Gray and brown SILTY CLAY Gray SILT
SB-02	20’	5” Topsoil	Brown CLAYEY SAND Gray and brown SILTY CLAY Gray SILT
SB-03	20’	4½” Topsoil 5’ 7½” Sandy Clay (FILL) *Total Thickness: 6’*	Brown SILTY CLAY Gray SILT
SB-04	20’	5” Asphalt 6” Gravelly Sand (FILL) 5’ 1” Sandy Clay (FILL) *Total Thickness: 6’*	Brown and gray SILTY CLAY
SB-05	20’	10½” Asphalt 2’ 7½” Sandy Clay (FILL) *Total Thickness: 3’ 6”*	Gray SILTY CLAY Gray fine to coarse SAND Gray SILTY CLAY
SB-06	20’	5” Topsoil 3’ 1” Clayey Sand (FILL) 5’ Silty Clay (FILL) *Total Thickness: 8’ 6”*	Brown SILTY SAND Brown and gray SILTY CLAY
SB-07	20’	5” Topsoil 3’ 1” Sandy Clay (FILL) *Total Thickness: 3’ 6”*	Brown SILTY SAND Gray SILTY CLAY
SB-08	20’	4½” Topsoil 3’ 1½” Silty Sand (FILL) *Total Thickness: 3’ 6”*	Brown fine to coarse SAND Gray SILTY CLAY
SB-09	20’	5¼” Topsoil 3’ 6¾” Silty Sand (FILL) *Total Thickness: 3’ 6”*	Brown and gray SILTY CLAY Gray CLAYEY SILT
SB-10	40’	10” Asphalt 2’ 8” Silty Sand (FILL) 5’ Silty Clay (FILL) *Total Thickness: 8’ 6”*	Brown and gray SILTY CLAY

At the time of our field exploration, topsoil ranging from 4½ to 5¼ inches in thickness was encountered at the surface of soil boring locations SB-01 through SB-03 and SB-06 through SB-09. Asphalt associated with the existing facility was encountered at the surface of boring locations SB-04, SB-05, and SB-10 ranging from 5 to 10 inches in thickness. Beneath the topsoil and asphalt at each boring except for boring SB-02, old fill material composed of materials including silty sand, silty clay, sandy clay, clayey sand, and gravelly sand, was encountered which extended to depths ranging from 3½ to 8½ feet.

Beneath the topsoil, existing asphalt, and old fill soils, native soils were encountered generally characterized by predominantly gray and brown silty clay interbedded with occasional layers of sand, clayey sand, and silt.

The native brown and gray silty clay contained variable percentages of sand and gravel. Moisture contents of the tested silty clay samples ranged from 6 to 53 percent. Visually, the samples appeared moist when examined in the laboratory. Standard Penetration Test (SPT) results from within clay layers ranged from 7 blows per foot to over 50 blows per 6 inches (i.e., to hammer refusal). Unconfined compressive strength values estimated using a hand penetrometer ranged from 0.5 to over 4.5 TSF indicating a range of firm to very hard consistencies.

The native clayey sand, sand, and silt layers ranged from 1½ to 7½ feet in thickness. Moisture contents of the tested samples ranged from 5 to 13 percent. Visually, the samples appeared moist when examined in the laboratory. Standard Penetration Test (SPT) values from within the clayey sand, sand, and silt layers ranged from 11 blows per foot to over 50 blows in 6 inches indicating a range of medium dense to extremely dense relative densities.

Cobbles and/or boulders were not encountered during drilling operations. The boring logs should be referenced with respect to this information. The presence of boulders and cobbles in the profile is a result of the geologic method of deposition of the soil materials at this site. Even where cobbles or boulders were not noted within the profile they could be encountered very nearby or between the boring positions. The contractor should be equipped for this condition.

The above subsurface descriptions are of a generalized nature and are provided to highlight the major soil strata encountered. The Boring Logs included in the Appendix should be reviewed for specific information as to individual boring locations. The stratification shown on the Boring Logs represents the conditions encountered at the specific boring locations. Variations may occur and should be expected between boring locations. The stratification represents the approximate boundary between subsurface materials; however, the actual transition may be gradual, abrupt, or not clearly defined. In the absence of foreign substances or debris, it is often difficult to distinguish between native soils and clean fill soil.

Groundwater Information

Free groundwater was not encountered during or upon completion of drilling operations at any soil boring. Collapse of the soils above groundwater (i.e. “dry cave”) was not observed during drilling operations. The Boring Logs included in the Appendix should be reviewed for specific information as to depths of groundwater and dry caves.

Groundwater levels on this site are likely to vary because of seasonal conditions and fluctuations should be anticipated. Groundwater quantities and flow volumes will largely depend on the permeability of the soil profile. It is recommended that the contractor determine the actual groundwater levels at the time of the construction to evaluate groundwater impact on construction procedures.

Site Seismic Classification

Ingham County in Michigan lies in the Central Stable Tectonic Region and in Seismic Zone area 0 of probable seismic activity of the Building Officials Congress of America (BOCA), National Building Code, and the Uniform Building Code (UBC). This zone indicates that minor damages due to occasional earthquakes might be expected in this area.

In the 2012 Michigan Building Code (MBC), the State of Michigan has adopted the provisions of the International Building Code (IBC). The Site Class is based on a weighted average of known or estimated soil properties for the uppermost 100 feet of the subsurface profile. Soil borings at the project site extended to a maximum depth of approximately 40 feet below the existing ground surface. Based on the regional geologic mapping, as well as data available on the Water Well Record Retrieval System of the Department of Environmental Quality in the State of Michigan, PSI anticipates that the subsurface conditions below the explored depth may consist of glacial till deposits of gravel, sand, and clay. Bedrock across the project site is most likely part of the Saginaw formation which consists predominantly of Pennsylvanian-age sandstone and shale and is often encountered at depths less than 100 feet. Based on our review of the available data, knowledge of regional geology and the Standard Penetration Test (SPT) N-values and approximated soil shear strength PSI estimates that the seismic design for this project, based on the upper 100 feet of the subsurface soil profile would be Site **Class D.**

The 2012 International Building Code requires a site class for the calculation of earthquake design forces. This class is a function of soil type (i.e., depth of soil and strata types). Based on the depth to rock and the estimated shear strength of the soil at the boring locations, Site Class “D” is recommended.

The USGS-NEHRP probabilistic ground motion values near 42.5648° N, and -84.4412° W are as follows:

Table 2: USGS-NEHRP Probabilistic Ground Motion Values					
Period (seconds)	**2% Probability of Event in 50 years * (%g)**	**Site Coefficients**	**Max. Spectral Acceleration Parameters**	**Design Spectral Acceleration Parameters**	
0.2 (S_s)	8.5	F_a = 1.6	S_{ms} = 0.136	S_{Ds} = 0.090	T_0 = 0.164
1.0 (S_1)	4.6	F_v = 2.4	S_{m1} = 0.110	S_{D1} = 0.074	T_s = 0.822

$S_{ms} = F_a S_s$ $S_{Ds} = 2/3 * S_{ms}$ $T_0 = 0.2 * S_{D1}/S_{Ds}$
$S_{m1} = F_v S_1$ $S_{D1} = 2/3 * S_{m1}$ $T_s = S_{D1}/S_{Ds}$

The Site Coefficients, F_a and F_v were interpolated from 2012 IBC Tables 1613.3(1) and 1613.3(2) as a function of the site classification and the mapped spectral response acceleration at the short (S_s) and 1 second (S_1) periods. The development of shear strains tending to cause liquefaction of sand deposits is governed by the character of the ground motion (i.e. acceleration and frequency), soil type, groundwater level, and in-situ stress conditions. PSI believes the risk of liquefaction occurring at this site is low based on the site being in a low seismic activity area.

EVALUATION AND RECOMMENDATIONS

Site Preparation

Prior to site grading activities or excavation for foundation elements, existing underground utilities, and structures, should be identified and rerouted or properly abandoned in-place. Existing underground utilities that are not re-routed or abandoned should be adequately marked and protected to minimize the potential for damage during construction activities. **Existing topsoil, existing pavement, and old fill soils as well as any apparent old fill soils (if encountered), should be stripped from the planned construction areas and should be performed under PSI supervision**. Topsoil, undocumented fill, and soils containing organics can potentially undergo high and variable volume changes when subjected to loads, resulting in detrimental performance of floor slabs, pavements, structural fills, and shallow foundations placed on them.

After the surface structures, pavement, old fill soils, and any loose/soft soils (if encountered) have been removed from the areas of construction and any cut sections are performed, exposed subgrades should be observed and be thoroughly proof rolled/compacted with a large, heavy rubber-tired vehicle prior to the placement of engineered fill or backfill required to achieve the proposed subgrade elevation. Areas that exhibit instability or are observed to rut or deflect excessively under the moving load should be further undercut, stabilized by aeration, drying (if wet) and additional compaction to attain a stable finished subgrade. The proof rolling/compacting and undercutting activities should be performed during a period of dry weather and should be performed under the supervision of the geotechnical engineer's representative. Exposed granular subgrades must be compacted to a minimum of 95 percent of the maximum dry density within 3 percent of the optimum moisture content as determined by ASTM D-1557 (Modified Proctor).

Where subgrade conditions are not improved through aeration, drying and compaction, or where undercut and replacement is considered impractical due to the underlying soil conditions, it may be necessary to stabilize localized areas of subgrade instability with a woven geotextile, geogrid and a layer of well graded crushed concrete or well graded coarse aggregate such as MDOT 4AA, 6A or 21AA. The need for the use of geotextile, geogrid and the thickness and gradation requirements of the crushed aggregate layer required should be determined at the time of the subgrade preparation, based on the condition of the exposed subgrade at the time of construction. The subgrade should be stabilized prior to placement of engineered fill or aggregate base course.

New engineered fill supporting at-grade structures should be an environmentally clean material, free of organic matter, frozen soil, or other deleterious material. The material proposed to be used as engineered fill should be evaluated and approved for use by a PSI geotechnical engineer or his representative prior to placement in the field.

After the subgrade has been stabilized, any engineered fill required may then be placed. PSI should monitor proper control of the placement and compaction of new fill soils. The new materials must be free of organic matter. Fill materials are to be placed in individual lifts not exceeding 8 inches in loose thickness. Each lift is to be compacted to 95 percent of the maximum dry density within 3 percent of the optimum moisture content as determined in accordance with ASTM Method D-1557 (Modified Proctor). A minimum of one test per 2,000 square feet of building should be performed for each lift, unless otherwise specified by the engineer. The moisture/density relationship (Proctor) of the material to be used as engineered fill should be evaluated by a PSI geotechnical engineer or his representative prior to placement in the field. PSI recommends one Proctor test for every 5,000 cubic yards (cyds) of fill and one test per each change of material.

While we recommend all fill soils be entirely removed from within the planned construction area (if encountered), some or all of the fill soils could be left in place for support of the pavements only, providing the owner accepts the risks associated in doing so. These risks include variable support characteristics and the possibility that buried topsoil or other unsuitable soil layer(s) could be present below or within fill deposits, resulting in an increased risk of detrimental settlement of the, pavements or utilities occurring. If these risks are unacceptable, then all fill soils must be removed as recommended and be replaced with engineered fill. Where organic soils or debris are present below fill soils, both the organic and fill soils should be entirely removed and replaced with engineered fill. If the owner elects to leave fill soils in place, additional test pits should be performed to better evaluate the fill soils. Regardless, all surface soils containing organics or debris at this site must be removed.

PSI must be on site prior to re-use of the existing native and fill materials to document and verify that these soils are suitable for the intended use as engineered fill. Imported materials to be utilized as structural fill should meet (or be similar to) the requirements of MDOT Class II granular soil. Construction traffic should be restricted from the exposed subgrade to help reduce the potential for loosening of the subgrade soils, particularly where excess moisture is present from groundwater and/or precipitation. PSI recommends that the fill be strategically placed so that the construction equipment remains on newly placed fill soils and not on the exposed subgrade during fill placement.

Foundation Recommendations for Shallow Foundations

With the exception of boring location SB-02, old fill materials were encountered at each soil boring location that are considered to be unreliable for shallow foundation support. Consequently, PSI recommends these old fill materials be undercut and replaced with newly placed and properly compacted engineered structural fill. Based in the soil test borings performed undercut should extend to depths between 3.5 of 8.5 feet below the existing grade within the footprint of the proposed building additions and should extend laterally to a distance of at least 10 feet outside of building edges. Engineered structural fill placement should be performed in accordance with the structural fill section of this report and under the supervision of PSI. Following undercutting and replacement, the new proposed structures may be supported on shallow foundations bearing in the new engineered structural fill materials. PSI recommends a **net allowable soil bearing capacity of up to 3,000 pounds per square foot** for shallow foundations bearing in the newly placed and compacted engineered structural fill.

In order to protect against frost action, perimeter footings, exterior footings and footings located in unheated areas must bear at a minimum depth of three and one-half (3 ½) feet below final surface grades. Interior footings not subject to frost action may be founded at a depth of at least eighteen (18) inches below the floor slab, provided that these foundations will be bearing on properly placed engineered backfill.

Footings supporting individual columns should have a minor dimension of no less than 36 inches and a minimum wall footing width of no less than 24 inches, even if those dimensions result in stresses below the allowable bearing capacity. The purpose of limiting the footing size is to prevent "punching" shear deformation and to provide for vertical stability.

The Structural Engineer should evaluate the need for the proposed buildings to be structurally independent of the existing building structure to allow independent movement between the existing building and the proposed new adjacent buildings. Where new foundations supporting the proposed buildings are placed adjacent to foundations supporting the existing building structures, they should be placed at the same elevation as the existing footings, if possible, to minimize superposition of loads. Foundations should then be stepped up as necessary at a grade no stepper than two units horizontal to one unit vertical to achieve the elevation of the new foundations.

Where excavations are extended adjacent to and below the footings supporting the existing building, it may be necessary to underpin those footings to transmit their loads to the same elevation as the new foundations. An evaluation of this condition should be made by PSI. If required, a contractor who specializes in this type of work should install the underpinning. Care should be exercised where excavations are performed nearby by to the existing structure so as to prevent undermining of the existing foundations, floor slabs and pavements. Temporary shoring may be needed if safe lateral distances are not available to accommodate a stable slope for the excavation sidewalls.

Where bearing soils are granular in nature, PSI recommends that the foundation inverts be compacted in place by several passes of a vibratory compactor, prior to placement of formwork or cast-in-place foundation concrete, to densify any soils disturbed during excavation as well as to densify the underlying native granular soils. The compaction should continue until no additional densification is observed with additional passes.

Unsuitable soils may be present at the bearing surface. Where bearing surfaces are not suitable to support foundations, they should be undercut and replaced with engineered fill or flowable fill, or foundations should be extended to bear directly on suitable native soils. In order to reduce the effects of differential movement that may occur due to variations in the character of the supporting soils and variations in seasonal moisture contents, it is recommended that building and wall footings be suitably reinforced.

Concrete Slab-on-Grade

The subgrade soils utilized for the support of slabs-on-grade should be prepared as indicated in the Site Preparation Section of this report. It appears that newly placed engineered fill (emplaced on suitable native soils) will be adequate for support of concrete slabs. If soft, lose or unsuitable fill soils are encountered at the subgrade level, we recommend that these materials be undercut to an adequate depth and replaced with properly compacted granular or low plasticity fill soil. Proof-Rolling, as discussed earlier in this report, should be performed to identify any soft or unsuitable soils, which should then be removed from the floor slab area prior to fill placement and/or floor slab construction.

A granular mat should be provided between the floor slab and the subgrade soil. It should be 4 inches or greater in thickness and be properly compacted as recommended in this report. The granular mat materials should comply with the current version of ACI 302.1.

Slabs should be suitably reinforced to make them as rigid as necessary. Proper joints should be provided at the junctions of the slab and the foundation system so that a small amount of independent movement can occur without causing damage. The floor areas should be provided with joints at frequent intervals to compensate for concrete volume changes during curing. If a vapor retarder/barrier will be utilized, placement should be following the current version of ACI 302.1, local building codes and the recommendations of the flooring manufacturer. **A modulus of subgrade reaction for the native soils (or imported fills) specified and conditioned as described in this report of 125 psi/in may be used for the floor slab design**. This value may be confirmed in the field by performing a 1-foot by 1-foot plate load test. However, depending on how the slab load is applied, the value must be geometrically modified.

Pavement Design Recommendations

Based on the scope of service requested by Kebs, Inc., California Bearing Ratio (CBR) analysis was not performed on samples of the expected subgrade soils. In lieu of extensive testing for determination of pavement subgrade support characteristics, we have made assumptions based on results from the Standard Penetration Test (SPT), and laboratory testing performed. These assumptions are based on the removal and replacement of the existing topsoil and fill soils as discussed in the Site Preparation Section of this report.

Estimated Soil Parameters

- Estimated Native Subgrade CBR = 1.5 to 2 percent
- Design Native Subgrade Resilient Modulus (MR) = 2,000 to 3,000 psi

Recommended Design Inputs

- Reliability = 85% (flexible); 95% (rigid)
- Standard Deviation = 0.49 (flexible); 0.39 (rigid)
- Initial Serviceability Index = 4.2
- Terminal Serviceability Index = 2.0
- New HMA Layer Coefficient = 0.42
- New Aggregate Base Layer Coefficient = 0.14

Traffic Assumptions (20-year Design Life)

- Light Duty - 25,000 ESAL's (Construction and Service)
- Medium Duty - 100,000 ESAL's (Construction and Service)

The CBR value should be verified by the most current version of ASTM laboratory test method D1883 and specific traffic frequencies and axle loading determined prior to pavement design acceptance. In accepting the following pavement designs based on the correlated CBR value, Kebs, Inc. must then accept a greater risk of over-design or pavement failure and/or higher maintenance costs, compared to an engineered design.

In view of the available soil information, the recommended site preparation activities, and from experience on similar projects, PSI is providing the following pavement sections for the pavement areas on this site. The first flexible profile will consist of a "light duty" pavement, to be used by passenger vehicles in the main parking areas. The second flexible profile will be a "medium duty" pavement which should be utilized in areas of channeled traffic (i.e. entrance and exit drives and areas of heavy loading). The recommended pavement sections were determined utilizing the WinPAS computer software which embodies the 1993 AASHTO Pavement Design System. The pavement sections are provided below:

Table 3: Recommended Pavement Sections

Pavement Section	Light Duty – Flexible	Medium Duty – Flexible	Medium Duty – Rigid
Wearing Course	1½" MDOT 36A	2" MDOT 36A	6" Concrete
Leveling Course	2" MDOT 13A	2½" MDOT 13A	
Aggregate Course	12" MDOT 21AA	14" MDOT 21AA	8" MDOT 21AA

The recommendations are based on the AASHTO design methods for flexible pavement design and are based on a design life of 20 years and the estimated subgrade support values. The sections represent typical light and medium duty type pavement sections for use in preliminary design. Final pavement section design should be provided by the design civil engineers based on actual traffic volumes and axle loads, laboratory determined California Bearing Ratio tests, and the owner's design life requirements. Periodic maintenance should be expected and performed on all pavements during the service life. All pavement materials and construction procedures should conform to (Michigan Department of Transportation) MDOT or appropriate local requirements.

These pavements may be placed after the subgrade has been properly prepared as outlined in this report. Unstable areas should be treated as outlined therein. Appropriate drainage, including finger drains around catch basins and perimeter drainage must be incorporated into the pavement design**. Inadequate drainage will result in heaving and significant distress to the pavement**.

CONSTRUCTION CONSIDERATIONS

Drainage and Groundwater Considerations

Free groundwater was not encountered during drilling operations or upon completion of drilling operations. Therefore, difficulty with groundwater seepage and subgrade instability is generally not anticipated during earthwork, foundation excavation and construction associated with the proposed project. However, it is possible for the groundwater table to vary within the depths explored during other times of the year depending upon climatic conditions (seasonal fluctuation). PSI recommends that the contractor verify the actual groundwater and seepage conditions at the time of the construction activities and propose the groundwater control methods for the Engineer’s approval, including the disposal of discharge water.

Every effort should be made to keep the excavations and any other prepared subgrades dry if water is encountered or if rainfall or snowmelt occurs during construction. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

Water should not be allowed to collect in foundation or subsurface level excavations or other prepared subgrades of the construction area, either during or after construction. Water accumulation should be removed from shallow excavations by pumping from sump pits placed around the perimeter of the excavation. Positive site surface drainage should be provided to reduce infiltration of surface water. The grades should be sloped away from the proposed structures and surface drainage should be collected and discharged.

Excavation Safety Considerations

Care must be taken so that all excavations are properly backfilled with suitable material compacted in accordance with the procedures outlined in this report. Before the backfill is placed, all water and loose debris should be removed from these excavations.

Materials removed from the excavation should not be stockpiled immediately adjacent to the excavation, in as much as this load may cause a sudden collapse of the embankment. The contractor should establish a minimum lateral distance from the crest of the slope for all vehicles and spoil piles. Likewise, the contractor should establish protective measures for exposed slope faces and preventative measures for the buildup of moisture in the excavation sidewalls which can cause slope instability. A slope stability analysis should be performed to determine the factor of safety for cut and fill depths if the depth of the excavations warrant. If temporary shoring of excavation sidewalls is performed, a qualified registered professional engineer must design it. Formed foundations will be required if placed on or within granular soils.

In Federal Register, Volume 54. No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that all excavations, whether they be utility trenches or footing excavations, be constructed in accordance with the current OSHA guidelines. It is PSI's understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable and safe, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

All earthwork and operations should be conducted in accordance with the project specifications and under the observation of a representative of the geotechnical engineer. We are providing this information solely as a service to GESTAMP Mason, LLC., PSI does not assume responsibility for construction site safety or the contractor’s or other parties’ compliance with local, state, and federal safety or other regulations. Such responsibility is not being implied and should not be inferred.

GEOTECHNICAL RISK

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations presented in the preceding sections constitute PSI's professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and referenced during this evaluation, and PSI's experience in working with these conditions.

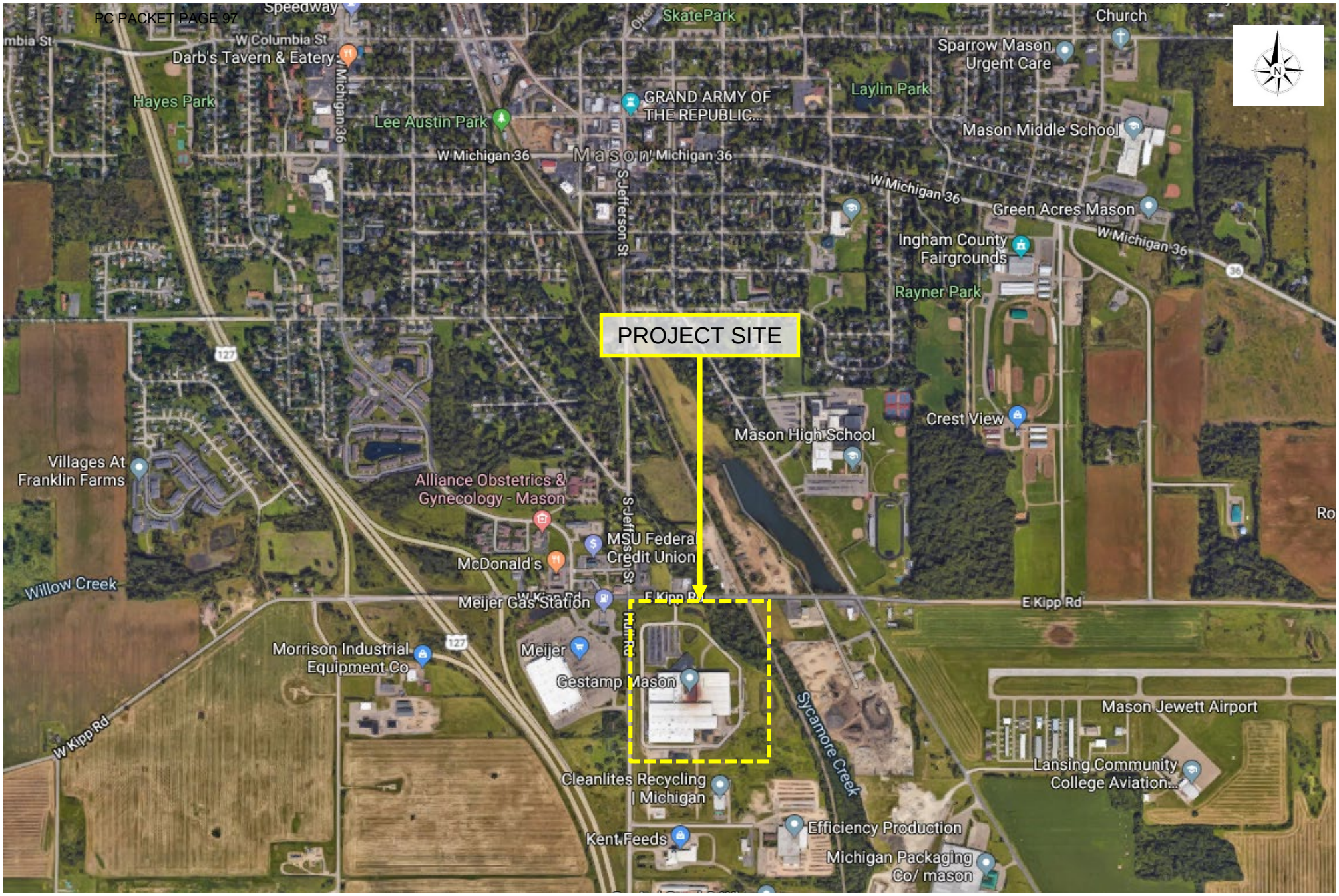
REPORT LIMITATIONS

The recommendations submitted for the proposed building additions at the existing GESTAMP Mason, LLC facility located at 200 East Kipp Road, in Mason, Michigan are based on the available soil information and the design details furnished by GESTAMP Mason, LLC. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI must be notified immediately to determine if changes in the foundation recommendations are required. If PSI is not retained to perform these functions, PSI cannot be responsible for the impact of those conditions on the performance of the project.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are complete, PSI should be retained to review the final design plans and specifications. This review is required to verify that the engineering recommendations are appropriate for the final configuration and that they have been properly incorporated into the design documents. This report has been prepared for the exclusive use of GESTAMP Mason, LLC for the proposed building additions at the existing Gestamp Mason, LLC. facility located at 200 East Kipp Road, in Mason, Michigan.

APPENDIX



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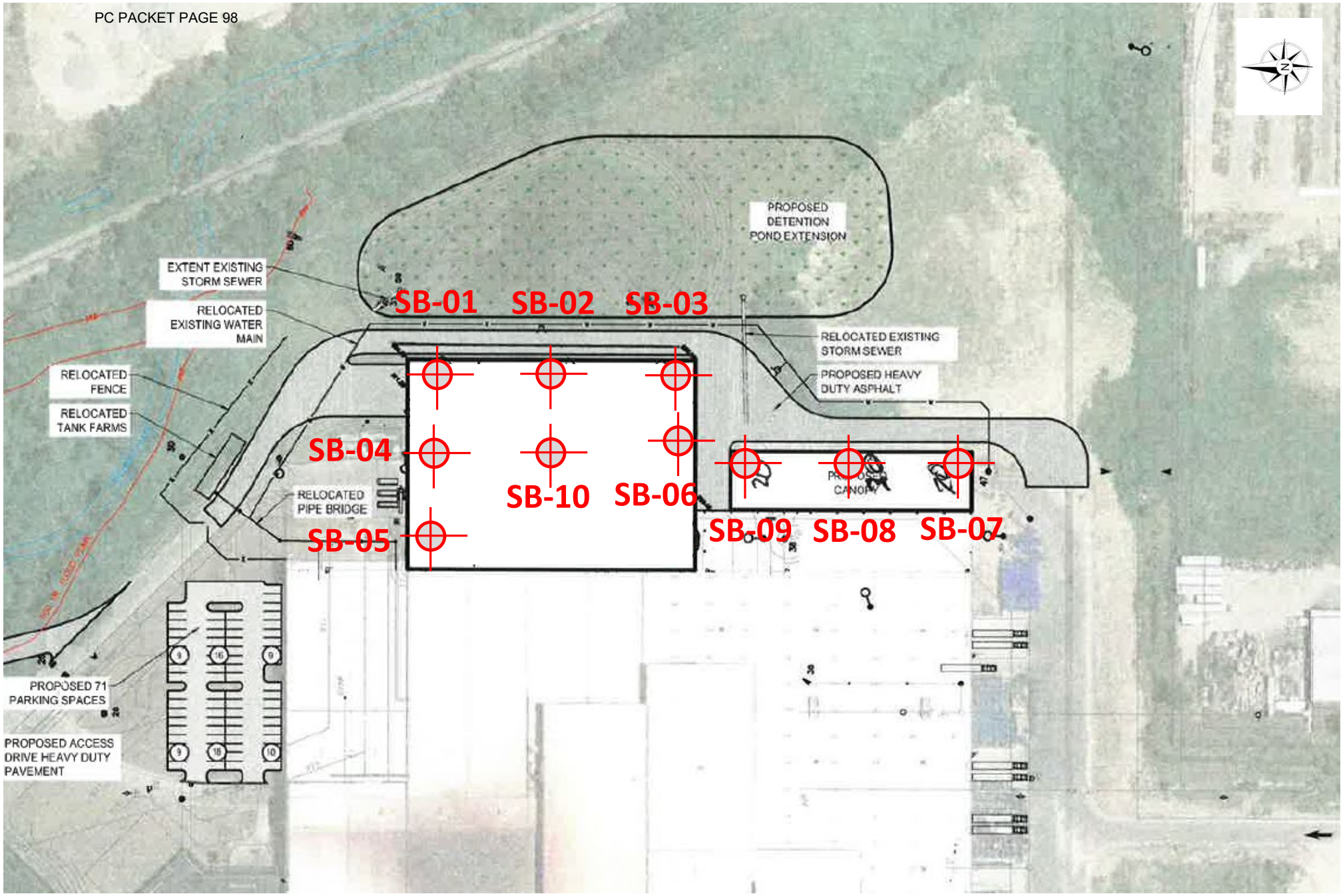
SITE LOCATION DIAGRAM

GESTAMP Mason WL Expansion
200 East Kipp Road
Mason, Michigan 48854

FIGURE NO. 1

PSI Project No. 0406413
Prepared By: P. C.
Prepared On: 8-22-19



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BORING LOCATION DIAGRAM

GESTAMP Mason WL Expansion
200 East Kipp Road
Mason, Michigan 48854

FIGURE NO. 2
PSI Project No. 0406413
Prepared By: P.C.
Prepared On: 8-22-19

BORING SB-01

DATE STARTED:	8/7/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/7/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	913 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			4 ½" TOPSOIL			
		1	15	Dark brown CLAYEY SAND with Silt, moist (FILL)		6-6-10 N=16	7 / 11
910		2	18	Gray and brown mottled SILTY CLAY with Sand, trace Gravel, moist, hard		6-5-4 N=9	16
	5	3	10			5-6-4 N=10	16
905		4	15		CL-ML	6-7-11 N=18	15
	10						
900		5	12	Gray SILT with Clay, trace Sand, moist, dense to extremely dense		11-13-23 N=36	5
	15				ML		
895		6	10			27-50+	6
	20			Boring terminated approximately 20 feet below existing ground surface.			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks

intertek psi
Professional Service Industries, Inc.
3120 Sovereign Drive, Suite C
Lansing, MI 48911
Telephone: (517) 394-5700

PROJECT NO.: 0406-413
PROJECT: Gestamp Mason - WL Expansion
LOCATION: 200 East Kipp Road
Mason, Michigan

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-02

DATE STARTED:	8/7/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/7/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	913 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

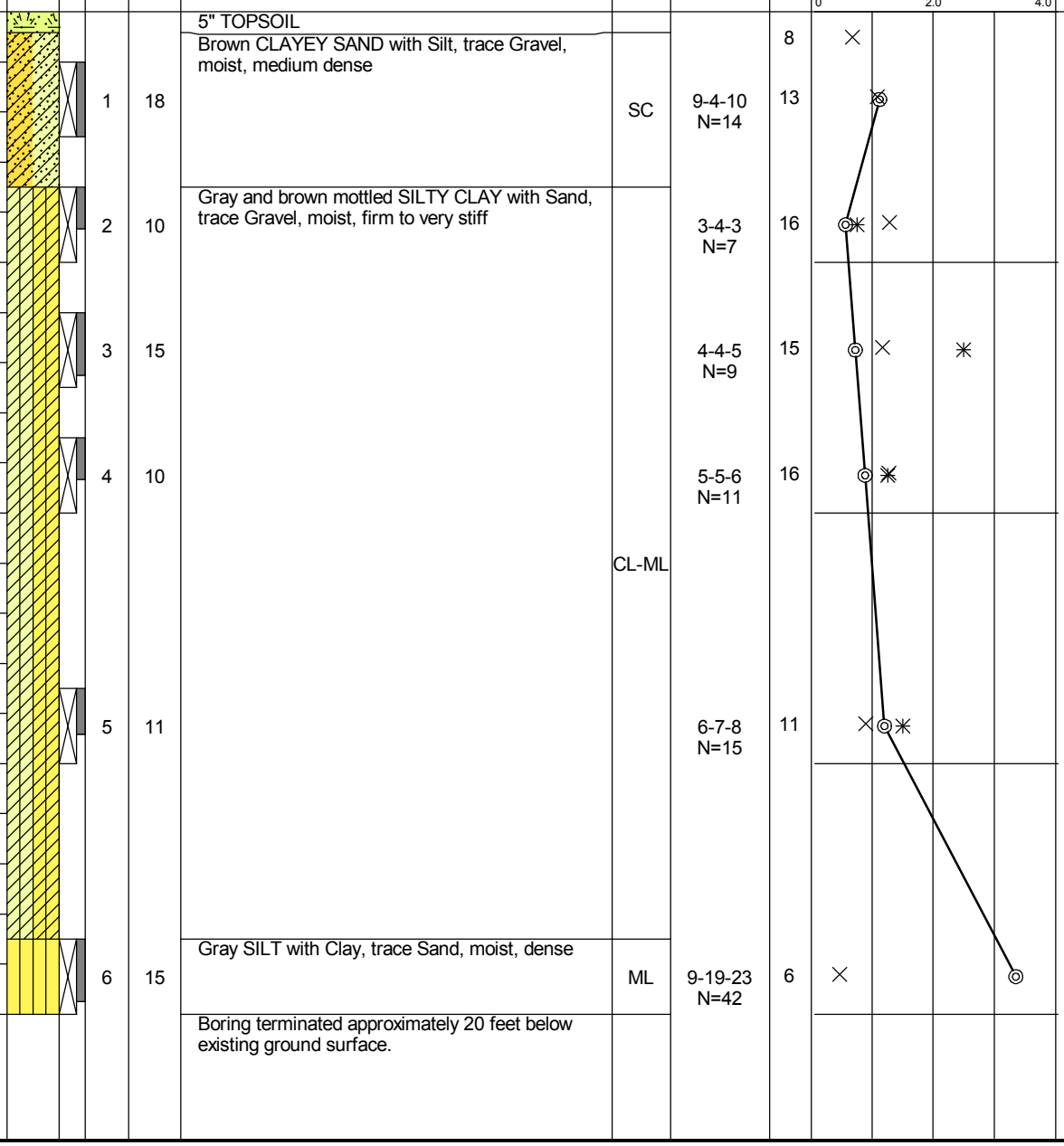
Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			5" TOPSOIL			8
		1	18	Brown CLAYEY SAND with Silt, trace Gravel, moist, medium dense	SC	9-4-10 N=14	13
910							
		2	10	Gray and brown mottled SILTY CLAY with Sand, trace Gravel, moist, firm to very stiff		3-4-3 N=7	16
	5						
		3	15			4-4-5 N=9	15
905							
		4	10			5-5-6 N=11	16
	10				CL-ML		
900							
		5	11			6-7-8 N=15	11
	15						
895							
		6	15	Gray SILT with Clay, trace Sand, moist, dense	ML	9-19-23 N=42	6
	20			Boring terminated approximately 20 feet below existing ground surface.			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks



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Telephone: (517) 394-5700

PROJECT NO.: 0406-413
PROJECT: Gestamp Mason - WL Expansion
LOCATION: 200 East Kipp Road
Mason, Michigan

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-03

DATE STARTED:	8/7/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/7/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	913 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			4½" TOPSOIL			
				Dark brown SANDY CLAY with Silt, trace Gravel, moist (FILL)			9
		1	16			5-4-7 N=11	12
910							
		2	9			11-10-11 N=21	12
	5						
				Brown SILTY CLAY with Sand, trace Gravel, moist, very stiff to hard			
		3	15			8-7-12 N=19	13
905							
		4	12		CL-ML	6-10-9 N=19	12
	10						
				Gray SILT with Clay, trace Sand, moist, medium dense to dense			
900							
		5	15			15-11-10 N=21	12
	15				ML		
895							
		6	10			17-15-26 N=41	8
	20			Boring terminated approximately 20 feet below existing ground surface.			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks

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Mason, Michigan

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BORING SB-04

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	914 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

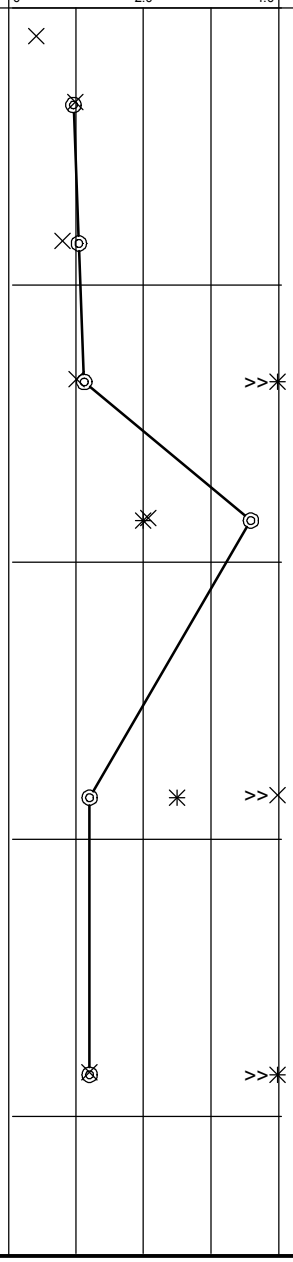
Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			5" ASPHALT			5
				Brown GRAVELLY SAND with Silt, trace Clay, moist (FILL)			
		1	17	Brown SANDY CLAY with Silt, trace Gravel, moist (FILL)		5-6-6 N=12	12
910		2	12			6-6-7 N=13	10
	5						
		3	18	Brown SILTY CLAY with Sand, trace Gravel, moist, stiff to hard		6-6-8 N=14	13
905		4	18		CL-ML	5-16-29 N=45	26
	10						
900		5	10	Gray SILTY CLAY with Sand, trace Gravel, moist, very stiff to hard Wet Sand seams at 13.5 to 15 feet	CL-ML	4-7-8 N=15	53
	15						
895		6	15			5-8-7 N=15	15
	20			Boring terminated approximately 20 feet below existing pavement surface.			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks



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PROJECT NO.: 0406-413
PROJECT: Gestamp Mason - WL Expansion
LOCATION: 200 East Kipp Road
Mason, Michigan

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BORING SB-05

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	914 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					10½" ASPHALT			8		
				1	18	Gray SANDY CLAY with Silt, trace Gravel, moist (FILL)		4-3-6 N=9	11		
910				2	18	Gray SILTY CLAY with Sand, trace Gravel, moist, hard		6-7-6 N=13	10		
	5						CL-ML				
				3	18			7-11-16 N=27	8		
905				4	18	Gray fine to coarse SAND with Silt, trace Gravel, moist, dense		6-18-18 N=36	10		
	10						SP				
900				5	18	Gray SILTY CLAY with Sand, trace Gravel, moist, stiff to very stiff		4-5-5 N=10	12		
	15						CL-ML				
895				6	18			13-11-12 N=23	16		
	20					Boring terminated approximately 20 feet below existing pavement surface.					

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LOCATION: 200 East Kipp Road
Mason, Michigan

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BORING SB-06

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	912 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					5" TOPSOIL					
						Dark brown CLAYEY SAND with Silt, trace Gravel, moist (FILL)			10	×	
910				1	15			4-5-6 N=11	11	◎×	
						Brown SILTY CLAY with Sand, trace Gravel, moist (FILL)					
				2	15			5-4-6 N=10	12	◎×	
	5										
905				3	14			5-4-5 N=9	18	◎ ×	
						Brown SILTY SAND with Clay, trace Gravel, moist, medium dense					
				4	12			6-5-7 N=12	13	◎	
	10						SM				
900											
						Brown and gray mottled SILTY CLAY with Sand, trace Gravel, moist, firm to stiff					
				5	6			14-16-7 N=23	17	✳◎	
	15										
895							CL-ML				
				6	6			12-10-10 N=20	13	✳ × ◎	
	20					Boring terminated approximately 20 feet below existing ground surface.					

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Mason, Michigan

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BORING SB-07

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	911 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					5" TOPSOIL			6		
910				1	14	Brown SANDY CLAY with Silt, trace Gravel, moist (FILL)		18-10-7 N=17	8		
	5			2	16	Brown SILTY SAND with Clay, trace Gravel, moist, medium dense	SM	12-8-11 N=19	10		
905				3	12			7-6-5 N=11	11		
	10			4	12	Gray SILTY CLAY with Sand, trace Gravel, moist, hard		6-8-10 N=18	9		
900											
	15			5	14		CL-ML	12-20-23 N=43	9		
895											
	20			6	18			14-40-43 N=83	6		
						Boring terminated approximately 20 feet below existing ground surface.					

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Mason, Michigan

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BORING SB-08

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	911 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					4½" TOPSOIL					
910						Brown SILTY SAND with Clay, trace Gravel, moist (FILL)			6	×	
				1	12			4-5-5 N=10	6	×◎	
				2	18	Brown fine to coarse SAND with Silt, trace Clay, trace Gravel, moist, medium dense		5-5-6 N=11	8	×◎	
	5										
905				3	8		SP	8-8-9 N=16	8	×◎	
				4	18	Gray SILTY CLAY with Sand, trace Gravel, moist, very stiff to hard		7-5-8 N=13	11	×◎ >>✳	
	10										
900											
				5	2		CL-ML	50+	11	× >>◎	
	15										
895											
				6	18			70-30-16 N=46	6	× ✳ ◎	
	20					Boring terminated approximately 20 feet below existing ground surface.					

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LOCATION: 200 East Kipp Road
Mason, Michigan

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BORING SB-09

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	20.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	912 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					5¼" TOPSOIL					
						Dark brown SILTY SAND with Clay, trace Gravel, moist (FILL)			7		
910				1	16			4-9-9 N=18	12		
						Brown and gray mottled SILTY CLAY with Sand, trace Gravel, moist, very stiff					
				2	15			12-20-12 N=32	9		
	5										
905				3	12			4-5-7 N=12	12		
							CL-ML				
				4	14			10-18-13 N=31	12		
	10										
900											
						Gray CLAYEY SILT with Sand, trace Gravel, moist, dense					
				5	18			10-14-19 N=33	8		
	15										
895							ML				
				6	18			13-17-17 N=34	10		
	20					Boring terminated approximately 20 feet below existing ground surface.					

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Mason, Michigan

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DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	40.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	912 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

BORING SB-10

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					10" ASPHALT			6		
						Dark brown SILTY SAND with Clay, trace Gravel, moist (FILL)					
910				1	18	Dark brown SILTY CLAY with Sand, trace Gravel, moist (FILL)		4-9-9 N=18	9		
				2	18			6-9-16 N=25	11		
	5										
905				3	18	Brown SILTY SAND with Clay, trace Gravel, moist (FILL)		6-7-6 N=13	10		
				4	18	Brown and gray mottled SILTY CLAY with Sand, trace Gravel, moist, stiff	CL-ML	5-4-6 N=10	17		
	10										
900				5	18	Gray SILTY CLAY with Sand, trace Gravel, moist, very stiff to very hard		6-6-7 N=13	13		
	15										
895							CL-ML				
				6	16			9-15-14 N=29	9	>>✳	
	20										
890						*Continued Next Page*					

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LOCATION: 200 East Kipp Road
Mason, Michigan

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BORING SB-10

DATE STARTED:	8/15/19	**DRILL COMPANY:**	PSI
DATE COMPLETED:	8/15/19	**DRILLER:** D. Guajardo	**LOGGED BY:** A. Alhowshabi
COMPLETION DEPTH	40.0 ft	**DRILL RIG:**	CME-55
BENCHMARK:	N/A	**DRILLING METHOD:**	3 1/4" HSA
ELEVATION:	912 ft	**SAMPLING METHOD:**	SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	M. Nabil / T. Khalaff / P. Cook

REMARKS: None

Water		
	While Drilling	N/A
	Upon Completion	N/A
	Cave Depth	N/A

BORING LOCATION:
See Boring Location Diagram

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
						Gray SILTY CLAY with Sand, trace Gravel, moist, very stiff to very hard					
	25			7	17			50-50/6"	11	× >>◎	
885											
	30			8	17			80-50/6"	4	× >>◎	
880							CL-ML				
	35			9	2			55-50/6"	9	× >>◎	
875											
	40			10	2			50/6"	17	× >>◎	
						Boring terminated approximately 40 feet below existing pavement surface.					

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WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Project Name: 0406413 GESTAMP
Route:
Location:
Owner/Agency: Gestamp Mason, LLC
Design Engineer: Flexible Light Duty 25,000 ESALs

Flexible Pavement Design/Evaluation

Structural Number	2.95		**Subgrade Resilient Modulus**	2,000.00	**psi**
Total Flexible ESALs	25,000		**Initial Serviceability**	4.20	
Reliability	85.00	**percent**	**Terminal Serviceability**	2.00	
Overall Standard Deviation	0.49				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.42	1.00	3.50	1.47
Graded Stone Base	0.14	1.00	12.00	1.68
			Σ SN	3.15

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Project Name: 0406413 GESTAMP
Route:
Location:
Owner/Agency: Gestamp Mason, LLC
Design Engineer: Flexible Medium Duty 100,000 ESALs

Flexible Pavement Design/Evaluation

Structural Number	3.63		**Subgrade Resilient Modulus**	2,000.00	**psi**
Total Flexible ESALs	100,000		**Initial Serviceability**	4.20	
Reliability	85.00	**percent**	**Terminal Serviceability**	2.00	
Overall Standard Deviation	0.49				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.42	1.00	4.50	1.89
Graded Stone Base	0.14	1.00	14.00	1.96
			Σ SN	3.85

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.
HSA: Hollow Stem Auger - typically 3¼" or 4¼ I.D. openings, except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry
R.C.: Diamond Bit Core Sampler
H.A.: Hand Auger
P.A.: Power Auger - Handheld motorized auger

SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
RC: Rock Core
TC: Texas Cone
BS: Bulk Sample
PM: Pressuremeter
CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N_{60}: A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q_u: Unconfined compressive strength, TSF
Q_p: Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL),%
DD: Dry unit weight, pcf
▼,▽,▼ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (¾ in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to ¾ in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

Q_U - TSF	N - Blows/foot	Consistency
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

Description	Criteria
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term	% Dry Weight
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

Description	Criteria
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided:	Fracture planes appear polished or glossy, sometimes striated
Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed:	Inclusion of small pockets of different soils
Layer:	Inclusion greater than 3 inches thick (75 mm)
Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

Q_U - TSF	Consistency
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

Description	Criteria
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

Voids	Void Diameter
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)

Component	Size Range
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

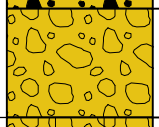
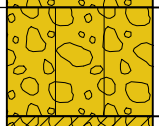
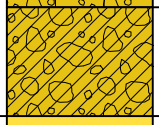
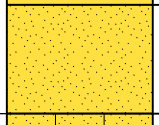
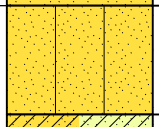
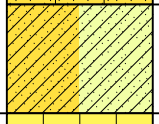
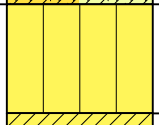
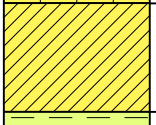
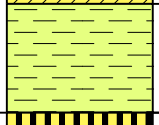
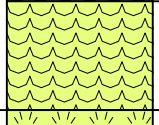
Rock Mass Description	RQD Value
Excellent	90 -100
Good	75 - 90
Fair	50 - 75
Poor	25 -50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

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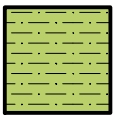
Graphic Symbols for Materials and Rock Deposits

CONCRETE
Portland Cement Concrete

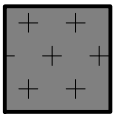
BITUMINOUS CONCRETE



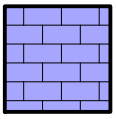
CLAYSTONE

COAL
Coal, Anthracite Coal

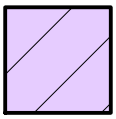
CONGLOMERATE/BRECCIA
Conglomerate, Breccia



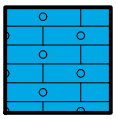
IGNEOUS ROCK
Anorthsite, Basalt, Metabasalt, Diabase (Gabbro), Gabbro, Granite/Granodionite, Homfels, Pegmatite, Rhyolite/Metarhyolite



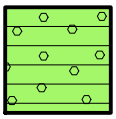
LIMESTONE
Limestone, Dolomite



METAMORPHIC ROCK
Amphibolite, Gneiss, Marble, Phyllite, Quartzite, Schist, Serpentinite, Slate

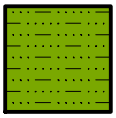


CHERT

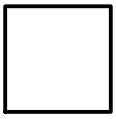


SANDSTONE
Sandstone, Orthoquarzite (Sandstone)

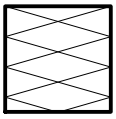
SHALE



SILTSTONE



NO RECOVERY



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Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —* should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

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Intertek

For more than 135 years, companies around the world have depended on Intertek to help ensure the quality and safety of their products, processes and systems.

We go beyond testing, inspecting and certifying products; we are a Total Quality Assurance provider to industries worldwide. Through our global network of state-of-the-art facilities and industry-leading technical expertise we provide innovative and bespoke Assurance, Testing, Inspection and Certification services to customers. We provide a systemic approach to supporting our customers' Quality Assurance efforts in each of the areas of their operations including R&D, raw materials sourcing, components suppliers, manufacturing, transportation, distribution and retail channels, and consumer management.

Intertek is an industry leader with more than 42,000 employees in 1,000 locations in over 100 countries. We deliver Quality Assurance expertise 24 hours a day, 7 days a week with our industry-winning processes and customer-centric culture. Whether your business is local or global, we can help to ensure that your products meet quality, health, environmental, safety, and social accountability standards for virtually any market around the world. We hold extensive global accreditations, recognitions, and agreements, and our knowledge of and expertise in overcoming regulatory, market, and supply chain hurdles is unrivaled.

Our Mission

To exceed our customers' expectations with innovative and bespoke Assurance, Testing, Inspection and Certification services for their operations and supply chain.
Globally. 24/7.

Intertek can sharpen your competitive edge

- With reliable testing and certification for faster regulatory approval
- Through rapid, efficient entry to virtually any market in the world
- With Total Quality Assurance across your supply chain
- Through innovative leadership in meeting social accountability standards
- By reducing cost and minimizing health, safety, and security risks
- By becoming a TRUSTED BRAND

PSI

Professional Service Industries, Inc. (PSI), an Intertek company, nationally recognized consulting engineering and testing firm providing integrated services in several disciplines, including environmental consulting, building envelope consulting and testing, geotechnical engineering, construction materials testing and engineering, asbestos management and facilities engineering and consulting. We are recognized as one of the largest engineering design consulting companies in the US. We have been providing engineering consulting services to Fortune 500 clients and governmental agencies for over 100 years. However, our proudest accomplishment is the large number of clients that we have serviced for many years that keep coming back because of our responsiveness, commitment to listening to our clients, and consistent quality of service.

PSI has been providing business and industry with objective, accurate and useful information for more than 100 years. Today, we employ approximately 2,300 skilled personnel in 100 offices nationwide.

Distinguished as both a local and a national leader in engineering and environmental services, PSI is recognized in several disciplines including the following:

- Geotechnical Engineering
- Construction Materials Testing and Special Inspection
- Environmental Consulting
- Industrial Hygiene
- Nondestructive Examination
- Pavement Evaluation Services
- Building Science Solutions
    - Building Envelope
    - Curtainwall
    - Acoustic
    - Fire/Life Safety
    - Technology
    - Roof Consulting

PSI can provide outstanding consulting engineering and testing services; however, most of all we desire to demonstrate our commitment to excellence.

PSI provides its clients with ***Information To Build On*** in making knowledgeable, cost-effective business decisions that help their clients reduce expenses, improve quality and decrease liabilities.

A Commitment To Excellence

PSI maintains the highest professional and ethical standards, which include an economic awareness to provide the highest quality of personnel and service at a reasonable cost to our clients. Our unique combination of local, independent offices and nationwide resources means our project managers have the full responsibility for managing your local projects, and also have the national resources to handle the most challenging and complex projects, regardless of size.

While PSI's growth has been notable, even more impressive has been our ability to grow without sacrificing our technical knowledge or personalized attention to our clients. Recognition of the importance of our clients and repeat business has been a key factor in PSI's success. PSI will not sacrifice quality, value, or service to our clients.

A Commitment To Excellence (continued)

Our staff of professionals consists of the following:

- Professional Engineers (PE/PEng)
- Registered Roof Consultants (RRC)
- Registered Architects (AIA)
- Certified Industrial Hygienists (CIH)
- Registered Soil Scientists
- Engineers-In-Training (EIT)
- Registered Geologists

Our field and laboratory technicians are trained in-house and at special schools and seminars. Our project managers and technicians are certified by associations such as the following and also work with other specialized organizations within each discipline.

- Roofing Industry Educational Institute (RIEI)
- Roof Consultants Institute (RCI)
- American Concrete Institute (ACI)
- National Institute for the Certification of Engineering Technicians (NICET)
- American Welding Society (AWS)
- International Code Council (ICC)
- International Fire Council (IFC)

Since our founding, we have dedicated ourselves to excellence both in our technical expertise and in customer service. It is this principal upon which we have based our organization and established a national reputation as a leader in the field of professional engineering, testing and consulting services.

PSI's Vision… is to be the most trusted, integrated provider of "Information To Build On" for clients that buy, sell, design, construct, develop, finance and manage properties and infrastructure. By being safe 24/7/365, hiring and retaining the best employees, efficiently managing projects, and building close client relationships, we will be successful in growing PSI and in balancing the needs of our employees, clients and investors.

Stormwater Management Plan

For

GESTAMP EXPANSION 2021
City of Mason
Ingham County, Michigan

Prepared for

Gestamp Mason LLC
200 E. Kipp Road
Mason, MI 48854

Prepared by:

LSG Engineers & Surveyors
exceptional service
3135 Pine Tree Road, Suite D
Lansing, MI 48911
517-393-2902
Alan D. Boyer, PE

Job Number: 2679

July 2, 2021

Table of Contents

PROJECT DESCRIPTION

Gestamp is proposing to construct a 50,000 square foot manufacturing addition to their existing facility located at 200 E. Kipp Road in the City of Mason. The addition will be attached to the east side of the existing facility at the southeast corner. An existing canopy will be removed to construct the addition. The canopy will then be replaced along the proposed building addition.

A relocation of the ring road is anticipated to accommodate the building addition. Also anticipated are relocations of some of the onsite storm drainage and fire main as well as an expansion to Detention Basin # 3 to accommodate the increase in the impervious area.

SITE HISTORY SUMMARY

In 1998 the backbone of the existing site development was constructed. That plan included the initial building, parking and utilities. The stormwater management system consisted of a storm drainage collection system the conveyed runoff to three onsite detention basins. The system and those basins discharge to Sycamore Creek, a natural watercourse that passes through the northeast corner of the site.

Subsequent expansions to the site have occurred since 1998. Plans for several of those expansions included proposed volume increases to the Detention Basin # 3 on the eastern side of the site. It appears obvious that the purpose of those expansions was to accommodate the increase in on-site impervious area.

Based on our review of the 1998 plan set, numerous subsequent sets of expansion plans and our topographic survey which includes Detention Basin # 3, it seems apparent that the proposed interim expansions to Detention Basin # 3 were never constructed. This will be discussed later.

In 2011 a stormwater management plan was prepared by Latitude Engineering for a proposed building addition. A copy is included in the appendix of this report. That plan referenced a 2006 comprehensive stormwater evaluation conducted by Capital Consultants, Inc. The 2006 evaluation by Capital Consultants is not available. However, the 2011 Latitude plan references items from that 2006 evaluation; and, makes an incorrect conclusion. Both are relevant here. These are:

- The evaluation and storm water management plan identified three individual detention basins located within the facility's property. The individual basins were confirmed to meet or exceed the requirements for storm water management.
- The existing Detention Basin #3 has an available storage capacity of 444,740 cubic feet.

The first appears accurate based on our review of the historic plans and present day existing system. The second is likely a misunderstanding of the 2006 evaluation, where the 444,740 cubic feet of available storage is the probable total for all three basins, not Detention Basin # 3 alone.

STORM WATER MANAGEMENT PLAN

The currently proposed expansion will only affect the areas tributary to Detention Basin #3. The drainage area tributary to Detention Basin #3 has been reported by Latitude and Capital Consultants to be 43.68 acres. This area is used for this report and plan to maintain consistency with previous work.

Outlet

Under the past and current Ingham County Drain Commissioner's (ICDC) standards, the allowable discharge for 43.68 acres is 0.15 cfs per acre or 0.15 x 43.68 = 6.55 cfs. The original design of the Detention Basin #3 outlet structure included a 9.75-inch diameter orifice plate at an invert elevation of 896.4 NGVD29. At the design detention storage elevation of 902.6 NGVD29 this orifice would discharge 6.21 cfs which is consistent with the ICDC standards. No changes to the outlet structure appear to have been proposed or made during the subsequent expansions. We are proposing no changes to the outlet structure for this expansion.

Detention

Since we have concerns with the representations made as part of the 2011 Latitude plan, we have performed a separate evaluation of Detention Basin #3. It is as follows:

- Using the 1998 design drawings we determined that the basin volume as designed for Detention Basin #3 between the outlet elevation of 896.4 and elevation 903.5 was 338,871 cubic feet. This includes 272,672 cubic feet of detention storage for the 100-year event below the design high water elevation of 902.6. (Elevations referenced here are on the NGVD 29 datum.)
- Using the LSG topographic survey for this 2021 expansion we have determined that the existing available basin volume between the outlet elevation of 896.0 and elevation 903.1 is 355,010 cubic feet. This includes 290,033 cubic feet of detention storage for the 100-year event below the high water elevation of 902.2. (Elevations referenced here are on the NAVD88 datum.)
- Since its seems that the design volume from 1998 and the present day "as-built" or existing volume are very similar (within 5%), we believe the proposed interim expansions to Detention Basin #3 never occurred and that the reported 444,470 cubic feet of available storage for Detention Basin #3 is in error. The volume of 444,470 cubic feet is likely the total detention volume for all three basins.

The proposed 2021 expansion will add approximately 50,000 square feet of building and 10,000 square feet of pavement to the drainage area tributary to Detention Basin #3. To remain consistent with previous studies, that increase in impervious area represents an increase in the Rational Runoff Coefficient for the entire 43.68 acre drainage area from 0.82 (proposed by Latitude) to 0.83. Using the detention calculation spreadsheet developed in accordance with the Ingham County Drain Office standards we have determined for the proposed 2021 expansion that Detention Basin #3 should contain 322,809 cubic feet of volume between the design high water elevation of 902.2 NAVD88 and the outlet elevation of 896.0 NAVD88. This represents an increase of 32,800 cubic feet from the existing available volume. This increase is being accomplished by expanding the existing basin's south end. That expansion will add 36,281 cubic feet of detention volume to the basin.

SYCAMORE CREEK FLOODPLAIN

The expansion of the detention basin appears to be within the regulated 100-year floodplain associated with sycamore Creek. Although the floodplain boundary is shown on DFIRM panel 0254D, it is identified as Zone A and there is no elevation assigned to that boundary. That boundary is shown on the plans and identified as such.

Excavation within the floodplain limits is a permittable activity under the jurisdiction of EGLE. For the permit application it was necessary to estimate a floodplain elevation in order to determine an excavation volume. The EGLE permit application and related study and calculations are included in the appendix.

SUMMARY

It does not appear that Detention Basin #3 as it was originally designed and constructed was ever expanded as proposed by plans for various site and building improvements constructed after 1998. Considering the past and currently proposed improvements, the basin should be increased in size to accommodate the increase in impervious area and related runoff. This increase in size is accomplished by proposed earthwork and earth excavation. No changes are proposed for the site outlet structure. The discharge rate and design high water elevation remain the same.

APPENDIX

Orifice Outlet Calculations

Runoff Coefficient Calculation Spreadsheet

Detention Basin Calculation Spreadsheet for various conditions

Detention Basin Volume Spreadsheet for various conditions

Latitude Stormwater Management Plan 2011

EGLE JPA, Exhibits and Study

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Orifice Outlet — Analysis of the original outlet design
Job Name: **Gestamp Expansion 2021**
Job No: **2679**
Notes: Elevations reported here are NGVD29 Datum.

Dia. of Orifice	9.750	inches	per original design detail
Allowable Q	6.550	cfs	0.15 cfs/acre
Orifice Coeff.	0.620		
Outlet Invert	896.4		per original design detail
Centerline Elev of Orifice	896.8		based on original design detail

Elev	H (ft)	Area	Q (cfs)	Ave. Q (cfs)	
897.8	1.00	0.518	2.580	2.580	
898.0	1.20	0.518	2.826	2.703	
898.2	1.40	0.518	3.052	2.819	
898.4	1.60	0.518	3.263	2.930	
898.6	1.80	0.518	3.461	3.036	
898.8	2.00	0.518	3.648	3.138	
899.0	2.20	0.518	3.826	3.237	
899.2	2.40	0.518	3.996	3.332	
899.4	2.60	0.518	4.160	3.424	
899.6	2.80	0.518	4.317	3.513	
899.8	3.00	0.518	4.468	3.600	
900.0	3.20	0.518	4.615	3.684	
900.2	3.40	0.518	4.757	3.767	
900.4	3.60	0.518	4.895	3.847	
900.6	3.80	0.518	5.029	3.926	
900.8	4.00	0.518	5.159	4.003	
901.0	4.20	0.518	5.287	4.079	
901.2	4.40	0.518	5.411	4.153	
901.4	4.60	0.518	5.533	4.225	
901.6	4.80	0.518	5.652	4.297	
901.8	5.00	0.518	5.768	4.367	
902.0	5.20	0.518	5.883	4.436	
902.2	5.40	0.518	5.995	4.504	
902.4	5.60	0.518	6.105	4.570	
902.6	5.80	0.518	6.213	4.636	Q at design 100-year storage
902.8	6.00	0.518	6.319	4.701	
903.0	6.20	0.518	6.423	4.764	

EXISTING RUNOFF COEFFICIENT CALCULATION

Structure	1.00 Pond	0.95 Pavement	0.85 Gravel	0.95 Building	0.55 Lawn	(ACRES) Area	"C" Factor
Total	1.10	5.44	2.68	8.51	25.95	43.68	0.71

Overall acreage include offsite of 2.59 acres
Assumes a C for lawn of 0.55 due to slopes and irrigation. **Overall: 43.68 0.71**
Includes items identified as "Future" on the 1998 plans.

PROPOSED RUNOFF COEFFICIENT CALCULATION

Structure	1.00 Pond	0.95 Pavement	0.85 Gravel	0.95 Building	0.30 Lawn	(ACRES) Area	"C" Factor
						0.00	#DIV/0!

Overall: 0.00 #DIV/0!

Structure	1.00 Pond	0.95 Pavement	0.85 Gravel	0.95 Building	0.30 Lawn	(ACRES) Area	"C" Factor
						0.00	#DIV/0!
						0.00	#DIV/0!
						0.00	#DIV/0!
						0.00	#DIV/0!
						0.00	#DIV/0!
						0.00	#DIV/0!

Overall: 0.00 #DIV/0!

Total Site

Structure	1.00 Pond	0.95 Pavement	0.85 Gravel	0.95 Building	0.55 Lawn	(ACRES) Area	"C" Factor
Proposed	1.38	10.42	2.05	12.46	17.37	43.68	0.79

Overall acreage include offsite of 2.59 acres
Assumes a C for lawn of 0.55 due to slopes and irrigation. **Overall: 43.68 0.79**

Note: Use a proposed Rational C value of 0.83 for the detention calculations to determine the volume for the proposed 2021 expansion. The 2011 Latitude Engineering stormwater management plan identified the 2006 Capital Consultants C value as 0.81 and the Latitude proposed C value as 0.82. The 2021 proposed expansion represents an increase in the Rational C value from the 2011 value of 0.82 to approximately 0.83.

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DETENTION CALCULATION
Ingham County Drain Office Stds.

Project: Gestamp Expansion 2021 (As designed from 1998 plans)

Location: Mason, MI

Tributary Area (A) = 43.68 Acres **As reported by Latitude Eng.**

Compound Run-off Coefficient (C) = 0.71 **Estimated by LSG from hist. plans**

Design Constant (Ki) = A x C = 31.01

Allowable Outflow Rate (Qo)* = 6.55 cfs **Per ICDC Stds**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Duration (Minutes)	Duration (Seconds)	Intensity (100- yr Storm) (In/Hr)	Col. #2 x Col. #3 (Inches)	Inflow Volume = Col. #4 x Ki (Cu. Ft.)	Outflow Volume = Col. #2 x Qo (Cu. Ft.)	Storage Volume = Col. #5 - Col. #6 (Cu. Ft.)
5	300	7.44	2,232	69,233	1,966	67,268
10	600	6.26	3,756	116,492	3,931	112,561
15	900	5.41	4,865	150,875	5,897	144,979
20	1,200	4.76	5,709	177,059	7,862	169,196
30	1,800	3.84	6,913	214,392	11,794	202,599
60	3,600	2.44	8,784	272,417	23,587	248,830
90	5,400	1.79	9,676	300,068	35,381	264,687
120	7,200	1.42	10,205	316,492	47,174	269,317
180	10,800	1.00	10,816	335,444	70,762	264,682
240	14,400	0.78	11,166	346,296	94,349	251,948
360	21,600	0.54	11,564	358,636	141,523	217,112

NOTE: Figures in Columns (3) and (4) are valid where the intensity is computed by the formula I = 180/(T + 20.9)^0.979 (I.e., 100-yr. Curve), appropriate revisions shall be made for geographical areas where this formula does not apply.

* Allowable outflow rate Qo to be one of the following:

Case 1: Qo = capacity of existing discharge conduit or channel.

Case 2: Qo = q x A, where q = Permissible Discharge Rate per Acre of Tributary Area =
q = 0.15 cfs/acre.

First Flush Volume = 3630 x A = 158,558 CF

Bankfull Flood Volume = 8170 x A x C = 253,375 CF

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DETENTION CALCULATION
Ingham County Drain Office Stds.

Project: Gestamp Expansion 2021 (As reported by Latitude 2011 as existing.)

Location: Mason, MI

Tributary Area (A) = 43.68 Acres **As reported by Latitude Eng**

Compound Run-off Coefficient (C) = 0.81 **Rpt'd by Latitude from CC Eval**

Design Constant (Ki) = A x C = 35.38

Allowable Outflow Rate (Qo)* = 6.55 cfs **Per ICDC Stds**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Duration (Minutes)	Duration (Seconds)	Intensity (100- yr Storm) (In/Hr)	Col. #2 x Col. #3 (Inches)	Inflow Volume = Col. #4 x Ki (Cu. Ft.)	Outflow Volume = Col. #2 x Qo (Cu. Ft.)	Storage Volume = Col. #5 - Col. #6 (Cu. Ft.)
5	300	7.44	2,232	78,984	1,966	77,019
10	600	6.26	3,756	132,899	3,931	128,968
15	900	5.41	4,865	172,125	5,897	166,229
20	1,200	4.76	5,709	201,997	7,862	194,134
30	1,800	3.84	6,913	244,588	11,794	232,795
60	3,600	2.44	8,784	310,786	23,587	287,199
90	5,400	1.79	9,676	342,331	35,381	306,950
120	7,200	1.42	10,205	361,068	47,174	313,893
180	10,800	1.00	10,816	382,690	70,762	311,928
240	14,400	0.78	11,166	395,070	94,349	300,722
360	21,600	0.54	11,564	409,148	141,523	267,624

NOTE: Figures in Columns (3) and (4) are valid where the intensity is computed by the formula I = 180/(T + 20.9)^0.979 (I.e., 100-yr. Curve), appropriate revisions shall be made for geographical areas where this formula does not apply.

* Allowable outflow rate Qo to be one of the following:

Case 1: Qo = capacity of existing discharge conduit or channel.

Case 2: Qo = q x A, where q = Permissible Discharge Rate per Acre of Tributary Area =
q = 0.15 cfs/acre.

First Flush Volume = 3630 x A = 158,558 CF

Bankfull Flood Volume = 8170 x A x C = 289,061 CF

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DETENTION CALCULATION
Ingham County Drain Office Stds.

Project: Gestamp Expansion 2021 (As reported by Latitude 2011 as proposed.)

Location: Mason, MI

Tributary Area (A) = 43.68 Acres **As reported by Latitude Eng**

Compound Run-off Coefficient (C) = 0.82 **Proposed by Latitude 2011**

Design Constant (Ki) = A x C = 35.82

Allowable Outflow Rate (Qo)* = 6.55 cfs **Per ICDC Stds**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Duration (Minutes)	Duration (Seconds)	Intensity (100- yr Storm) (In/Hr)	Col. #2 x Col. #3 (Inches)	Inflow Volume = Col. #4 x Ki (Cu. Ft.)	Outflow Volume = Col. #2 x Qo (Cu. Ft.)	Storage Volume = Col. #5 - Col. #6 (Cu. Ft.)
5	300	7.44	2,232	79,959	1,966	77,994
10	600	6.26	3,756	134,540	3,931	130,609
15	900	5.41	4,865	174,250	5,897	168,354
20	1,200	4.76	5,709	204,490	7,862	196,628
30	1,800	3.84	6,913	247,608	11,794	235,814
60	3,600	2.44	8,784	314,623	23,587	291,035
90	5,400	1.79	9,676	346,557	35,381	311,176
120	7,200	1.42	10,205	365,525	47,174	318,351
180	10,800	1.00	10,816	387,414	70,762	316,652
240	14,400	0.78	11,166	399,948	94,349	305,599
360	21,600	0.54	11,564	414,199	141,523	272,676

NOTE: Figures in Columns (3) and (4) are valid where the intensity is computed by the formula I = 180/(T + 20.9)^0.979 (I.e., 100-yr. Curve), appropriate revisions shall be made for geographical areas where this formula does not apply.

* Allowable outflow rate Qo to be one of the following:

Case 1: Qo = capacity of existing discharge conduit or channel.

Case 2: Qo = q x A, where q = Permissible Discharge Rate per Acre of Tributary Area =
q = 0.15 cfs/acre.

First Flush Volume = 3630 x A = 158,558 CF

Bankfull Flood Volume = 8170 x A x C = 292,630 CF

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DETENTION CALCULATION
Ingham County Drain Office Stds.

Project: Gestamp Expansion 2021 (As proposed by LSG 2021)

Location: Mason, MI

Tributary Area (A) = 43.68 Acres **As reported by Latitude Eng**

Compound Run-off Coefficient (C) = 0.83 **Proposed by LSG for 2021**

Design Constant (Ki) = A x C = 36.25

Allowable Outflow Rate (Qo)* = 6.55 cfs **Per ICDC Stds**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Duration (Minutes)	Duration (Seconds)	Intensity (100- yr Storm) (In/Hr)	Col. #2 x Col. #3 (Inches)	Inflow Volume = Col. #4 x Ki (Cu. Ft.)	Outflow Volume = Col. #2 x Qo (Cu. Ft.)	Storage Volume = Col. #5 - Col. #6 (Cu. Ft.)
5	300	7.44	2,232	80,935	1,966	78,969
10	600	6.26	3,756	136,181	3,931	132,249
15	900	5.41	4,865	176,376	5,897	170,479
20	1,200	4.76	5,709	206,984	7,862	199,122
30	1,800	3.84	6,913	250,628	11,794	238,834
60	3,600	2.44	8,784	318,459	23,587	294,872
90	5,400	1.79	9,676	350,783	35,381	315,403
120	7,200	1.42	10,205	369,983	47,174	322,809
180	10,800	1.00	10,816	392,139	70,762	321,377
240	14,400	0.78	11,166	404,825	94,349	310,476
360	21,600	0.54	11,564	419,250	141,523	277,727

NOTE: Figures in Columns (3) and (4) are valid where the intensity is computed by the formula I = 180/(T + 20.9)^0.979 (I.e., 100-yr. Curve), appropriate revisions shall be made for geographical areas where this formula does not apply.

* Allowable outflow rate Qo to be one of the following:

Case 1: Qo = capacity of existing discharge conduit or channel.

Case 2: Qo = q x A, where q = Permissible Discharge Rate per Acre of Tributary Area =
q = 0.15 cfs/acre.

First Flush Volume = 3630 x A = 158,558 CF

Bankfull Flood Volume = 8170 x A x C = 296,198 CF

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Detention Basin Volume Data
Job Name: Gestamp Expansion 2021
Job No.: 2679

DETENTION BASIN NO. 1 1998 DESIGN (Reported elevations are NGVD29 Datum)

CONTOUR ELEVATION	AREA sq.ft.	INCREMENTAL VOLUME cu.ft.	ACCUMULATED VOLUME cu.ft.	ACCUMULATED VOLUME ac-ft
				0.000
896.00	10160			
		11699	11699	0.269
897.00	13238			
		14900	26599	0.611
898.00	16561			
		18336	44934	1.032
899.00	20110			
		21980	66914	1.536
900.00	23850			
		12413	79327	1.821
900.50	25800			

Design Volume from 1998 plans below 900.5 NGVD29 (900.1 NAVD88)	79327	cf
Design Volume below design WSEL of 899.0 NGVD 29 (898.6 NAVD88)	44934	cf

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Detention Basin Volume Data
Job Name: Gestamp Expansion 2021
Job No.: 2679

DETENTION BASIN NO. 2 1998 DESIGN (Reported elevations are NGVD29 Datum)

CONTOUR ELEVATION	AREA sq.ft.	INCREMENTAL VOLUME cu.ft.	ACCUMULATED VOLUME cu.ft.	ACCUMULATED VOLUME ac-ft
				0.000
904.50	11106			
		12359	12359	0.284
905.50	13612			
		14978	27337	0.628
906.50	16344			
		17824	45161	1.037
907.50	19303			

Design Volume from 1998 plans below 907.5 NGVD29 (907.1 NAVD88)	45161	cf
Design Volume below design WSEL of 907.5 NGVD 29 (907.1 NAVD88)	45161	cf

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Detention Basin Volume Data
Job Name: Gestamp Expansion 2021
Job No.: 2679

DETENTION BASIN NO. 3 1998 DESIGN (Reported elevations are NGVD29 Datum)

CONTOUR ELEVATION	AREA sq.ft.	INCREMENTAL VOLUME cu.ft.	ACCUMULATED VOLUME cu.ft.	ACCUMULATED VOLUME ac-ft
				0.000
896.40	0			
		1386	1386	0.032
897.00	4621			
		15301	16687	0.383
898.00	25980			
		37152	53839	1.236
899.00	48324			
		52265	106103	2.436
900.00	56205			
		59072	165175	3.792
901.00	61939			
		64918	230093	5.282
902.00	67896			
		70966	301058	6.911
903.00	74035			
		37813	338871	7.779
903.50	77215			

Design Volume from 1998 plans below 903.5 NGVD29 (903.1 NAVD88)	338871	cf
Design Volume below design WSEL of 902.6 NGVD 29 (902.2 NAVD88)	272672	cf

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Detention Basin Volume Data
Job Name: Gestamp Expansion 2021
Job No.: 2679

DETENTION BASIN NO. 3 EXISTING CONDITIONS (Reported elevations are NAVD88 Datum)

CONTOUR ELEVATION	AREA sq.ft.	INCREMENTAL VOLUME cu.ft.	ACCUMULATED VOLUME cu.ft.	ACCUMULATED VOLUME ac-ft
				0.000
896.00	0			
		19000	19000	0.436
897.00	38000			
		40500	59500	1.366
898.00	43000			
		45710	105210	2.415
899.00	48420			
		50843	156053	3.582
900.00	53266			
		55996	212049	4.868
901.00	58726			
		61740	273789	6.285
902.00	64753			
		81222	355010	8.150
903.00	97690			

Design Volume from 1998 plans below 903.5 NGVD29 (903.1 NAVD88)	338871	cf
Reported Volumes from Capital Consultants (2006) & Latitude (2011)	**444740**	cf
Existing Volume reported from 2016 plans	**175844**	cf
Proposed Volume reported from 2017 plans	**197974**	cf
Current Volume by LSG Survey below 903.1 NAVD88 (903.5 NGVD29)	355010	cf
Current Volume below design WSEL 902.2 NAVD88 (902.6 NGVD29)	290033	cf

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Detention Basin Volume Data
Job Name: Gestamp Expansion 2021
Job No.: 2679

DETENTION BASIN NO. 3 PROPOSED EXPANSION (Reported elevations are NAVD88 Datum)

CONTOUR ELEVATION	AREA sq.ft.	INCREMENTAL VOLUME cu.ft.	ACCUMULATED VOLUME cu.ft.	ACCUMULATED VOLUME ac-ft
				0.000
896.00	0			
		0	0	0.000
897.00	0			
		0	0	0.000
898.00	0			
		5072	5072	0.116
899.00	10143			
		10083	15155	0.348
900.00	10023			
		9838	24992	0.574
901.00	9652			
		9490	34482	0.792
902.00	9327			
		8923	43405	0.996
903.00	8519			
		7979	51384	1.180
904.00	**7439**			
		6885	**58269**	**1.338**
905.00	**6331**			
		5238	**63507**	**1.458**
906.00	**4145**			
		3604	**67111**	**1.541**
907.00	**3063**			
		2449	**69560**	**1.597**
908.00	**1835**			
		1158	**70717**	**1.623**
909.00	**480**			
		1006	**71723**	**1.647**
910.00	**1531**			

Current Volume below design WSEL 902.2 NAVD88 (902.6 NGVD29)	290033	cf
Proposed Addn'l Volume for this expansion below elev. 902.2 NAVD88	36281	cf
Total Proposed below elev. 902.2	326314	cf

Values shown as **00000** represent earthwork that will not contribute to the detention storage volume.

LATITUDE
engineering, inc.

STORM WATER MANAGEMENT PLAN
Gestamp
106,500 sft. Building Addition
September 20, 2011

Prepared by: Calvin R. Becksvoort, P.E.
Latitude Engineering, Inc.
September 19, 2011

Project Description

Gestamp is proposing to construct a 106,500 square foot manufacturing addition to their existing facility located at 200 E. Kipp Road in the City of Mason. The addition will be attached to the south side of the existing facility.

Storm Water Management History

In 2006, during the development of a building expansion at the facility, a comprehensive storm water evaluation was conducted by Capital Consultants, Inc. The evaluation and storm water management plan identified three individual detention basins located within the facility's property. The individual basins were confirmed to meet or exceed the requirements for storm water management.

STORM WATER MANAGEMENT PLAN

The area of this proposed expansion is located within the storm water evaluation area defined for Detention Basin #3 of the 2006 Plan. Detention Basin #3 provided a detailed analysis and design for 41.09 acres of the facility's property along with an additional 2.59 acres of off-site area draining into the facility's property.

The area of the proposed 106,500 sft. expansion currently utilizes a portion of the existing drainage infrastructure of the facility. This expansion will modify the existing storm sewer system and the discharge from the expansion will continue to flow into Detention Basin #3.

This Storm Water Management Plan will conduct a "side by side" evaluation with the data provided for the 2006 Plan. Currently, the surface area of the proposed expansion consists of impervious roadway systems, an open unpaved poor quality lawn surface and an aggregate surfaced parking/maneuvering area. The 2006 Plan identifies a Runoff Coefficient ("C") for the individual sub-drainage areas within the Basin #3 drainage area. The proposed expansion will modify the surface permeability and thereby modify the "C" coefficient used for

LATITUDE engineering, inc.

storm water volume determination. The overall drainage area discharging into Basin #3 will not change. The following provides the comparison and calculations of those changes.
The area of disruption to the existing facility property for this expansion is slightly less than four acres. The 2006 Plan provides the individual storm structures within the facility area but a plan referencing the numeration of the individual basins is not available for direct comparison. The individual listings for the numbered 2006 Plan structures does indicate that the predominant "C" coefficient used for determination of runoff was 0.90 with several structures having a "C" coefficient indicated as 0.85. This determination will establish all proposed disrupted surfaces use a "C" coefficient of 0.95 for calculations of runoff and storage. This will provide for an additional "safety factor" to insure that the storage volume within Basin #3 is adequate.

2006 Plan Overall Basin #3 Site Runoff Coefficient: 0.81 ("C)
2006 Basin #3 Drainage Area: 43.68 acres

Proposed Modification Area: 174,000 sft (3.99 acres)
(This represents an approximate 9% modification of the area for Basin #3)

Change in Requirements for Basin #3 (174,000 sft of change)

"C" Coefficient Change
2006 Basis: 174,000 sft. @ 0.85 = 148,665
Proposed: 174,000 sft. @ 0.95 = 165,300
Difference = 16,635

2006: 1,902,700 sft. (43.68 acres) @ 0.81 ("C") = 1,541,187 (product)
Difference = 16,635
New Product = 1,557,822

Revised "C" coefficient = **0.82**

Required Bank Full Volume Basin #3 (page 4, 2006 Plan)
8170 x 43.68 acres (drainage area) x 0.82 ("C) = 292,630 cft.
2006 Plan = 289,060 cft.
Change = **+3,570 cft.**

Storage Volume Determination Basin #3

2006 Plan (Capital Consultants, Inc.
4 Hour Peak Duration: 3.60" Rainfall, 13.104 100% Runoff,
"C" = 0.81, Runoff 10.614, Outflow = 2.165,
2006 STORAGE REQ'D. = 368,036 cubic feet

LATITUDE engineering, inc.

Proposed Modification Requirements
4 Hour Peak Duration, 3.60" Rainfall, 13.104 100% Runoff,
"C" = 0.82, Runoff 10.745, Outflow = 2.165
Modified STORAGE REQ'D. = 373,745 cubic feet

Detention Basin #3 Available Storage Volume: **444,740 cft.**

SUMMARY

The existing Detention Basin #3 has an available storage capacity of 444, 740 cubic feet. The proposed facility expansion within the drainage area of Basin #3 will result in a total required storage volume for Basin #3 equal to 373,745 cubic feet. This represents approximately 84% of the total volume available within Basin #3 and the proposed expansion will not compromise the existing detention capacity for the facility.

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas

version 1.23

(Submission #: HP9-G42G-CZ6GY, version 1)

Details

Submission ID	HP9-G42G-CZ6GY
Submission Reason	New
Status	Submitted

Fees

Fee	$500.00
Payments/Adjustments	($500.00)
Balance Due	$0.00 (Paid)

Form Input

Instructions

To download a copy or print these instructions. Please click this link (recommended).

Contact Information

Applicant Information (Usually the property owner)

First Name Christopher
Last Name *Trevisan*

Organization Name
Gestamp Mason LLC

Phone Type	Number	Extension
Business	517-244-8800	

Email
ctrevisan@us.gestamp.com

Address
200 Kipp Road
Mason, MI 48854

Is the Property Owner different from the Applicant?
No

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?
Yes

Upload Attachment for Authorization from Agent
Letter of Auth.pdf - 06/22/2021 02:17 PM
Comment
NONE PROVIDED

Agent Contact

First Name Alan
Last Name *Boyer*

Organization Name
LSG Engineers and Surveyors

Phone Type	Number	Extension
Business	5173932902	225

Email
boyer@lsg-es.com

Address
3135 Pinetree Road Suite D
Lansing, MI 48911

Are there additional property owners or other contacts you would like to add to the application?
No

Project Location

DEQ Site Reference Number (Pre-Populated)
-6402906778834934006

Project Location
42.56551526924255,-84.43831646826398

Project Location Address

> 200 Kipp Road
>
> Mason, MI 48854

County
Ingham

Is there a Property Tax ID Number(s) for the project area?
Yes
Please enter the Tax ID Number(s) for the project location
33-19-10-16-100-024

Is there Subdivision/Plat and Lot Number(s)?
No

Is this project within Indian Lands?
No

Local Unit of Government (LUG)
Mason

Directions to Project Site
US-127 south to Kipp Road exit. East on Kipp Road about 1/4 mile to the site on the south side of the road.

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?
No

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?
No

Environmental Area Number (if known):
NONE PROVIDED

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?
No

Were any regulated activities previously completed on this site under an EGLE and/or USACE permit?
Yes
List the permit numbers.
11-33-0030-FP

Describe the regulated activities that were previously permitted.
Expansion of the existing detention basin.

Have any activities commenced on this project?
No

Is this an after-the-fact application?
No

Are you aware of any unresolved violations of environmental law or litigation involving the property?
No

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?
No

Are there any other federal, interstate, state, or local agency authorizations associated with this project?
Yes

List all other federal, interstate, state, or local agency authorizations.

Agency	Type of Approval	Number	Date Applied	Approved/Denied/Undetermined
City of Mason	Site Plan Review	n/a	07/01/2021	Undetermined
Ingham County Drain Commissioner	Part 91 SESC	n/a	07/01/2021	Undetermined

Comments
NONE PROVIDED

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for.
Individual Permit for all other projects

This type of permit application requires that you include contact information for the adjacent landowners to this project. If you are only entering in a small number of bordering parcel owners contact information, please select "Enter list of recipients". If there is a rather large number of affected property owners such as a project that significantly affects lake levels, please upload a spreadsheet of the property owners. Please include names and mailing addresses.
Floodplain only application.

Project Description

Project Use: (select all that apply - Private, Commercial, Public/Government/Tribal, Receiving Federal/State Transportation Funds, Non-profit, or Other)
Commercial

Project Type (select all that apply):
Development-Commercial/Industrial

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.
Excavation to expand the volume of an existing detention basin which is shown by FEMA to be within the limits of the floodplain for Sycamore Creek. The excavation is in proposed for the south extremity of the existing basin, away from Sycamore Creek and below the base flood elevation.

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.
Excavation will be done early in the construction process and prior to the increase in the site impervious area. Work will be done with hydraulic excavators. Spoils will be placed on site and above the base flood elevation where they will them be stabilized, seeded and mulched. BMP's will be placed downslope to prevent sediment from entering the existing detention basin.

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.
None.

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)
There are no negative impacts to state and regulated waters. The positive impacts include the increase in flood volume below the BFE and the increase in detention volume adds an extra measure of treatment to prevent suspended sediment and pollutants from entering Sycamore Creek.

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.

> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.
Other Project Type

The Proposed Project will involve the following resources (check ALL that apply).
100-year Floodplain

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes?
No

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)
No

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application?
No

Is a subdivision, condominium, or new golf course proposed?
No

Floodplain

Proposed Activity
Excavation/Cut

100-Year Floodplain Elevation

Please provide a name for the stream, river, channel, or waterbody:	100-Year Floodplain Elevation (feet)	Datum	Source of Datum
Sycamore Creek	899	NAVD88	FIS

Upload Documents for Datum Source
NONE PROVIDED
Comment
NONE PROVIDED

Excavation/Cut volume below the 100-year floodplain elevation (cubic yards)
188

Calculations Upload
NONE PROVIDED
Comment
NONE PROVIDED

Is this project located in the floodway?
No

Were one or more Hydraulic Analyses completed for this project?
No

Local Unit of Government (LUG) Acknowledgement Letter Upload
NONE PROVIDED
Comment
NONE PROVIDED

Is there an existing building on site?
Yes

Existing Structure Information

Structure Name	Lowest adjacent grade (feet):	Foundation type	Foundation floor elevation (feet):	Height of crawl space/basement from finished foundation floor to bottom of floor joists (feet):	Elevation of 1st floor above basement floor/crawl space (feet):
Plant	911.2	concrete slab on grade	915.2	0	915.2

Upload of Proposed Site Plans

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	Yes
Fill and Excavation areas with associated amounts in cubic yards	Yes
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	N/A
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	Yes
Dimensions to other Structures and Lot Lines associated with the project	Yes
Topographic Contour Lines from licensed surveyor or engineer when applicable	Yes

Upload Site Plans and Cross Section Drawings for your Proposed Project

20210623_EGLE PERMIT_FINAL_Optimized.pdf - 06/23/2021 01:48 PM
Comment
NONE PROVIDED

Additional Required and Supplementary Documents

NONE PROVIDED
Comment
NONE PROVIDED

Fees

Individual Permit Fee:
+$500.00

Total Fee Amount:
$500.00

Is the applicant or landowner a State of Michigan Agency?
No

Attachments

Date	Attachment Name	Context	User
6/23/2021 1:48 PM	20210623_EGLE PERMIT_FINAL_Optimized.pdf	Attachment	Alan Boyer
6/22/2021 2:17 PM	Letter of Auth.pdf	Attachment	Alan Boyer

Status History

	User	Processing Status
6/15/2021 1:11:38 PM	Alan Boyer	Draft
6/23/2021 1:48:50 PM	Alan Boyer	Submitting
6/23/2021 1:49:57 PM	Alan Boyer	Submitted

GESTAMP MASON, LLC
200 E. Kipp Rd • Mason, Michigan 48854
Phone (517) 244-8800 Fax (517) 244-8899
www.gestamp.com

LETTER OF AUTHORIZATION FROM PROPERTY OWNER GRANTING PERMISSION FOR DESIGNATED AGENT TO OBTAIN PERMITS FROM THE CITY OF MASON / INGHAM COUNTY / STATE OF MICHIGAN

In the matter of the proposed Gestamp Expansion 2021 project, I/We, the undersigned, is/are the owners of the property located at 200 E. Kipp Road, Mason, MI, 48854 and grant permission to LSG Engineers & Surveyors to apply to the City of Mason, Ingham County and the State of Michigan (EGLE) for permits, as a designated agent, and discuss with the those agencies issues and concerns regarding submission, review comments and requirements of any submitted application.

Christopher Trevisan
Gestamp Mason, LLC

6/21/2021
Date

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

GESTAMP MASON 2021 EXPANSION
PROPOSED PROJECT AREA – LOCATION MAP

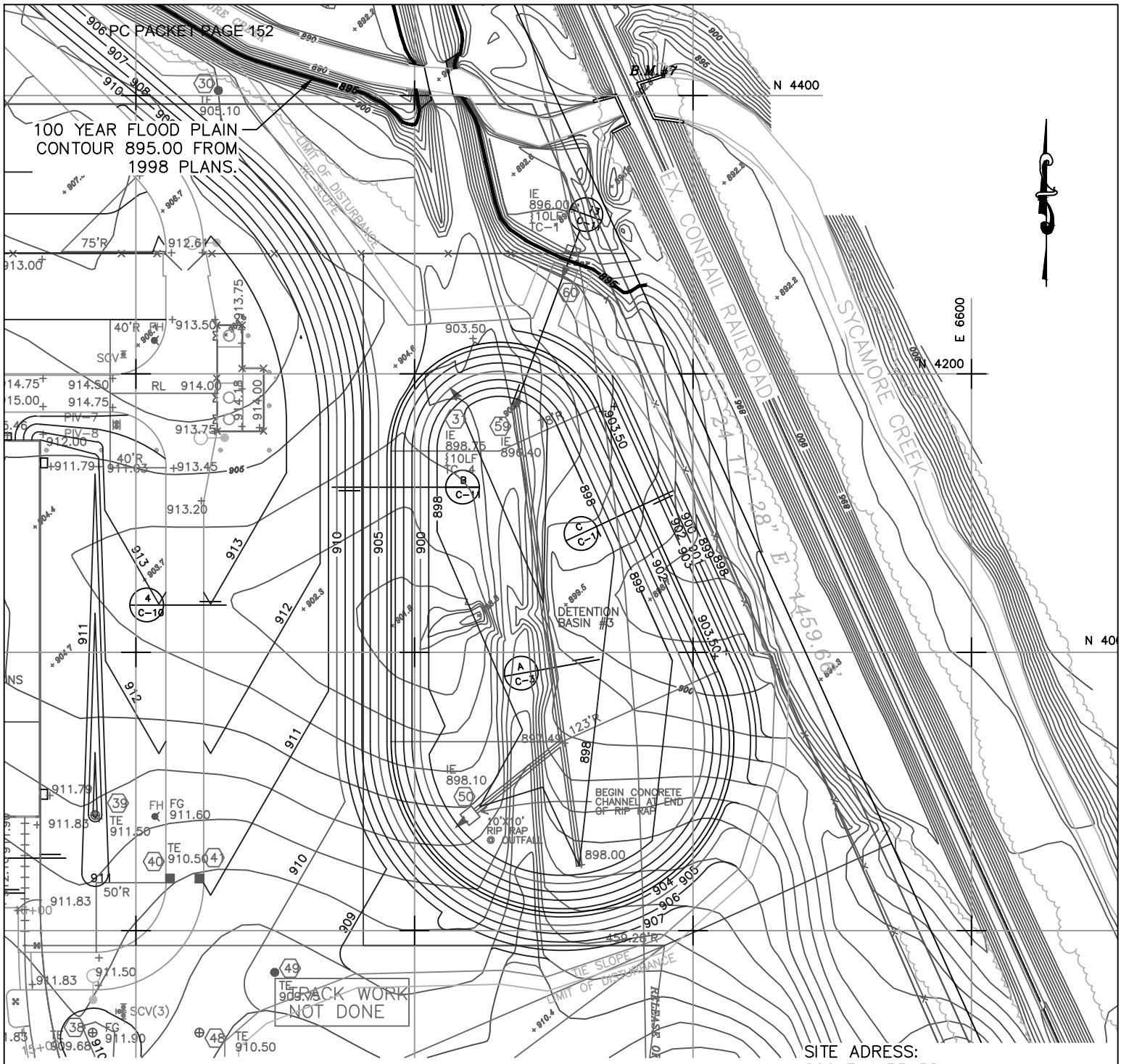
APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	1 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	–

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

2000 0 2000

Scale 1" = 2000'

THIS SHEET
DATUM: NAVD 88



SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

DETENTION BASIN #3 AS PROPOSED IN 1998. BASE FLOOD ELEVATION NOTED ON 1998 PLANS AS 895.00. TOTAL STORAGE BELOW ELEV. 903.50 (NGVD 29) = 338,871 CU. FT. VOLUME BELOW ELEV. 902.6 (NGVD 29) = 272,672 CU. FT.

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

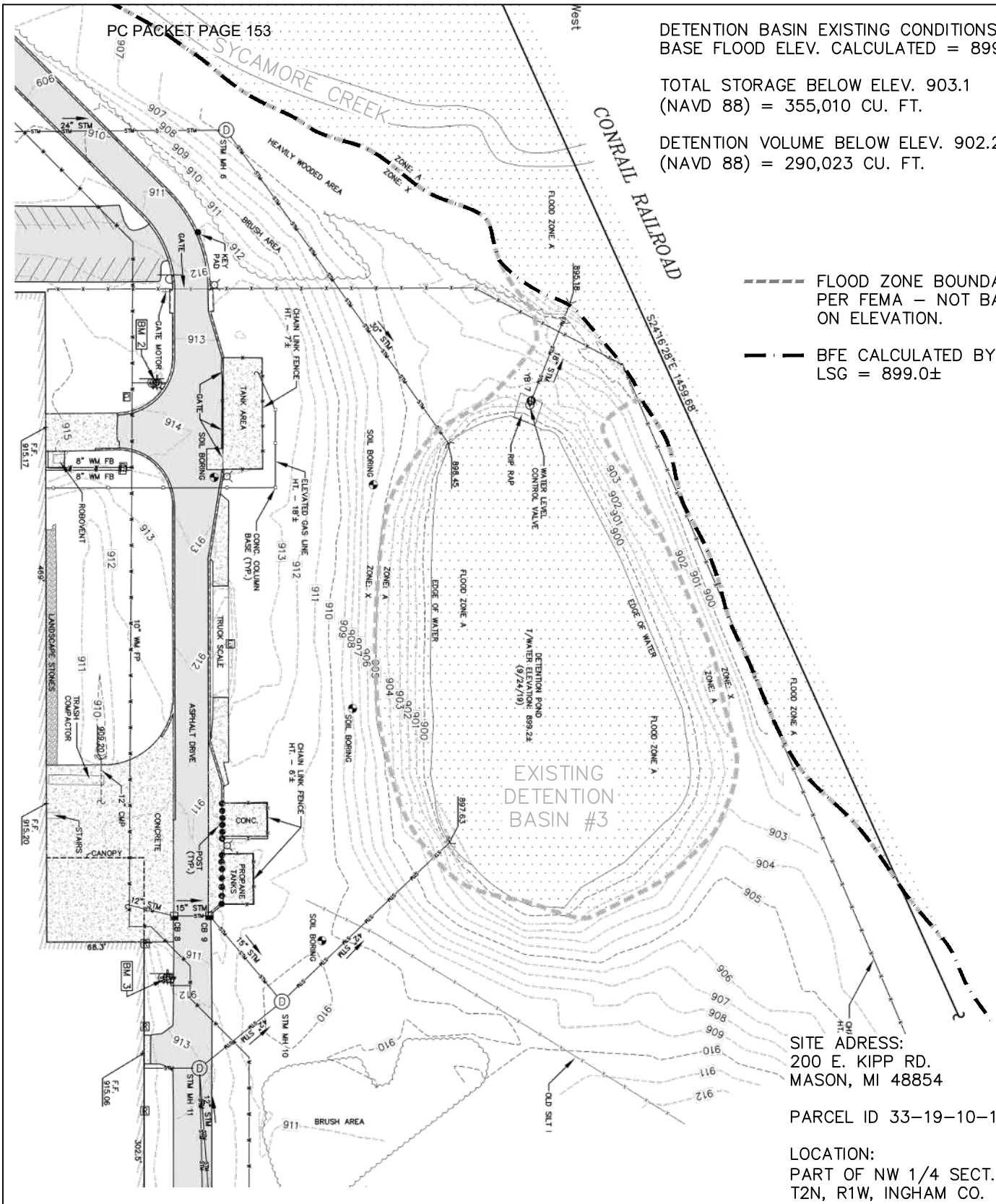
100 0 100

Scale 1" = 100'

THIS SHEET DATUM: NGVD 29

GESTAMP MASON 2021 EXPANSION
ORIGINAL DETENTION BASIN #3 – 1998 PLANS

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	2 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	–



DETENTION BASIN EXISTING CONDITIONS.
BASE FLOOD ELEV. CALCULATED = 899.0

TOTAL STORAGE BELOW ELEV. 903.1
(NAVD 88) = 355,010 CU. FT.

DETENTION VOLUME BELOW ELEV. 902.2
(NAVD 88) = 290,023 CU. FT.

FLOOD ZONE BOUNDARY PER FEMA – NOT BASED ON ELEVATION.

BFE CALCULATED BY LSG = 899.0±

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

100 0 100

Scale 1" = 100'

THIS SHEET
DATUM: NAVD 88

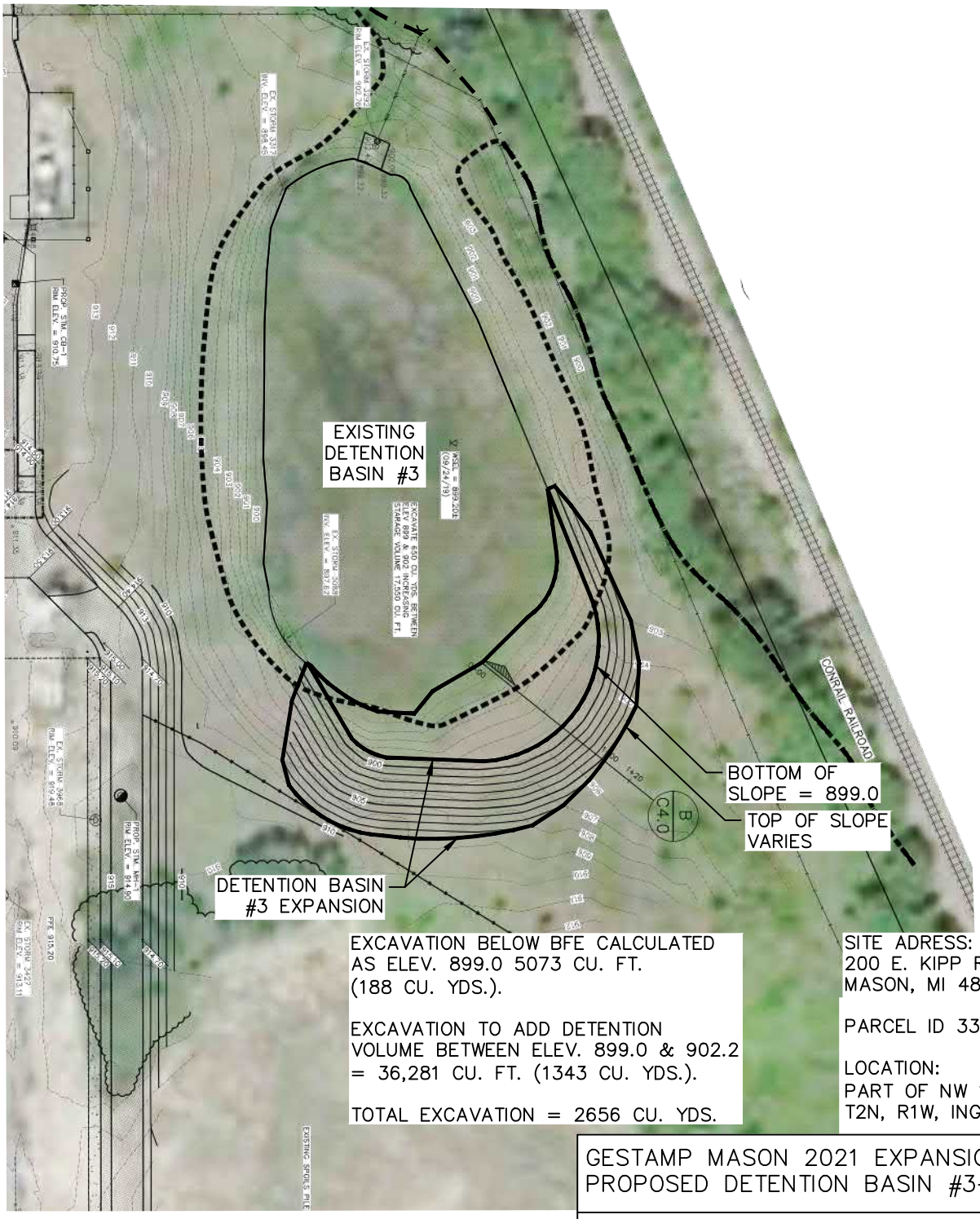
GESTAMP MASON 2021 EXPANSION
EXISTING DETENTION BASIN #3 – LSG TOPO

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	3 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	–

SYCAMORE CREEK

BFE BOUNDARY PER FEMA – NOT BASED ON ELEVATION.

BFE CALCULATED BY LSG = 899.0±



EXCAVATION BELOW BFE CALCULATED AS ELEV. 899.0 5073 CU. FT. (188 CU. YDS.).

EXCAVATION TO ADD DETENTION VOLUME BETWEEN ELEV. 899.0 & 902.2 = 36,281 CU. FT. (1343 CU. YDS.).

TOTAL EXCAVATION = 2656 CU. YDS.

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16, T2N, R1W, INGHAM CO.

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

100 0 100

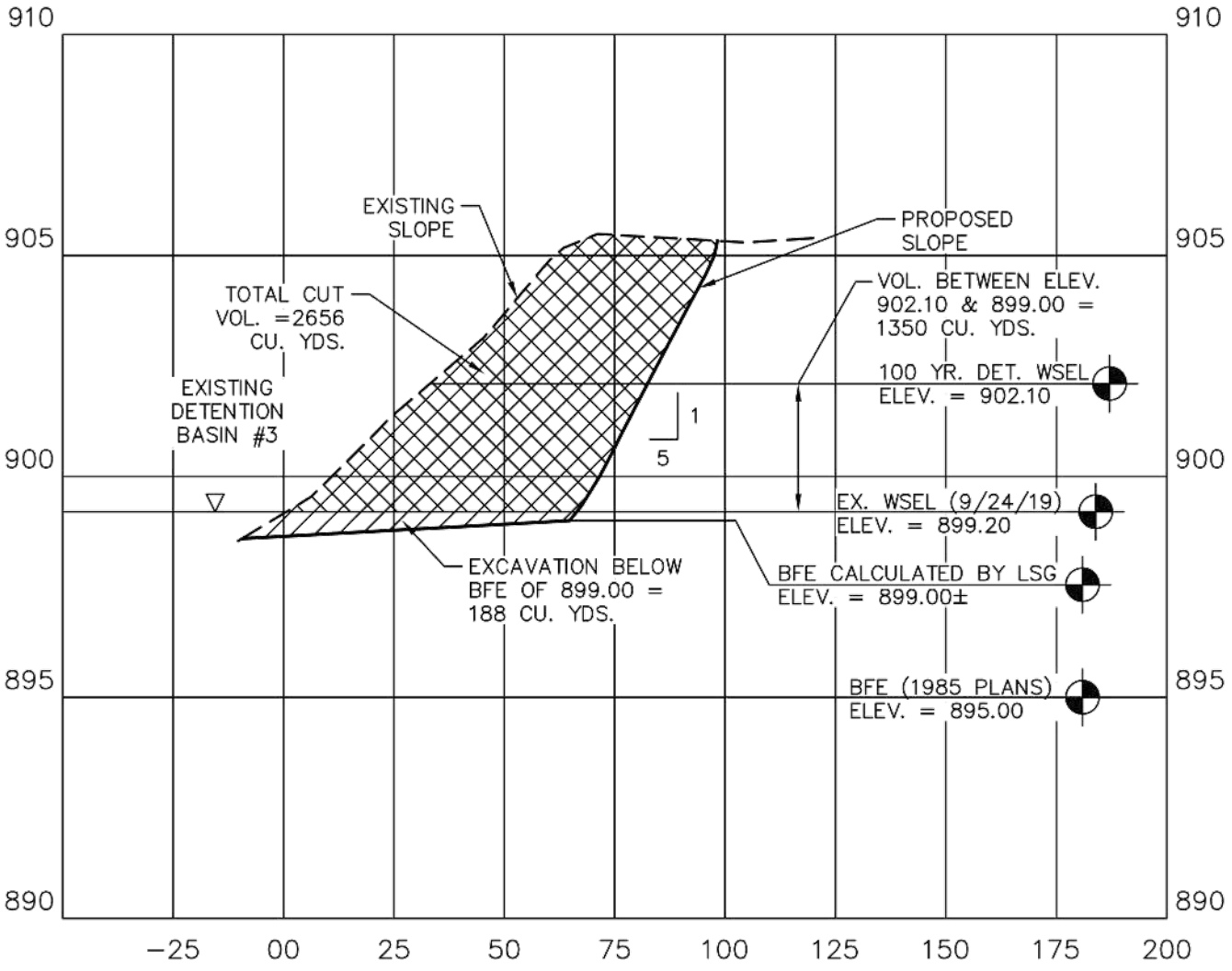
Scale 1" = 100'

THIS SHEET DATUM: NAVD 88

GESTAMP MASON 2021 EXPANSION
PROPOSED DETENTION BASIN #3–GRADING PLAN

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	4 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	–

DETENTION BASIN #3 SLOPE SECTION



DETAIL B / C4.0

SITE ADRESS:
200 E. KIPP RD.
MASON, MI 48854

PARCEL ID 33-19-10-16-100-024

LOCATION:
PART OF NW 1/4 SECT. 16,
T2N, R1W, INGHAM CO.

GESTAMP MASON 2021 EXPANSION
PROPOSED DETENTION BASIN #3-SLOPE SECTION

APPLICANT:	GESTAMP MASON
WATERWAY:	SYCAMORE CREEK
CITY:	MASON, MICHIGAN
COUNTY:	INGHAM
NUMBER OF SHEETS:	5 OF 5
DATE:	JUNE 21, 2021
EXHIBIT:	_

SUBTRACT 0.43' FROM DATUM NGVD 29 TO OBTAIN ELEVATIONS IN DATUM NAVD 88.

40 0 40

Scale 1" = 40'

THIS SHEET
DATUM: NAVD 88

PROJECT NARRATIVE
&
SUMMARY REPORT

of

Sycamore Creek

for

Gestamp Expansion 2021

Prepared By:

LSG Engineers & Surveyors
exceptional service

3135 Pine Tree Rd., Suite D
Lansing, MI 48911

Project No. 2679

June 22, 2021

TABLE OF CONTENTS

INTRODUCTION

Watercourse Name
Sycamore Creek

Flood Insurance Study
Ingham County, Michigan Flood Insurance Study (FIS) effective August 16, 2011
Community Name: City of Mason
Community Number: 260092
DFIRM: 0254D

Project Narrative

Gestamp Mason LLC is proposing the expansion of its existing industrial facility located at 200 E. Kipp Road, Mason, MI. The proposed expansion will require an increase in the existing onsite stormwater management detention basin to account for the increase in the onsite impervious area. The existing detention basin and related outlet structure were constructed in 1998 as part of the original site construction. The 1998 plans label the 100-year floodplain elevation associated with Sycamore Creek as 895.0. In August 2011 an updated Flood Insurance Study (FIS) was adopted for Ingham County, including the City of Mason, in which this site now lies. The FIS includes a detailed study along Sycamore Creek, up to the downstream end of the culvert under Kipp Road. The flood zone upstream of Kipp Road is identified con current DFIRM Panel 0254D as Zone A with no flood elevations identified. The original flood mapping of the area (1982) did not include this site since at that time the site was in Vevay Township which was non-participating. The current panel (0254D) shows the Zone A floodplain as including the existing onsite detention basin.

Purpose & Scope of Study

The purpose of this analysis is the estimate the 100-year floodplain elevation (BFE) of Scyamore Creek near Gestamp's existing onsite detention basin. This is being done to determine the amount of excavation below the BFE for the purpose of obtaining a permit under Part 31 of PA451 of 1994 as amended (NREPA).

METHOD OF ANALYSIS

Hydrologic Analysis Approach

For this study, no updates were made to the current effective hydrology in the FIS. The FIS contains flow rates at Sycamore Creek just upstream of confluence of Willow Creek for the 10-, 50-, 100-, & 500-year storm events. These are shown below.

Table 1. Summary of Discharges for Sycamore Creek from Flood Insurance Study

		Peak Discharges (cubic feet per second)			
Flooding Source and Location	**Drainage Area (sq.mi.)**	**10% - Annual-Chance**	**2% - Annual-Chance**	**1% - Annual-Chance**	**0.2% - Annual-Chance**
Sycamore Creek Just upstream of confluence of Willow Creek	17.7	655	845	980	1,300

Hydraulic Analysis Approach

The hydraulic method used for this analysis includes the use of the FHWA HY-8, Version 7.60 to evaluate the change in WSEL through, and resulting headwater upstream of the Kipp Road culvert.

Base Mapping Data Sources (Topography)

Base mapping data or topographic information used for this project include the following: the 2010 LIDAR data sets for Ingham County; the onsite topographic survey data from the 1998 construction plans and the 2019 survey data collect for the proposed 2021 expansion by LSG Engineers & Surveyors.

Vertical Datum

The elevations determined in this analysis are referenced to the North American Vertical Datum of 1988 (NAVD88). The 1998 topographic survey information and design drawings reference the National Geodetic Vertical Datum of 1929 (NGVD29). Where elevation data of that datum is referenced, the elevation on the NAVD88 is included parenthetically. The conversion from NGVD29 to NAVD88 is -0.43 feet.

ASSUMPTIONS

Boundary Conditions – Starting Water Surface Elevation (WSEL)

The starting WSEL or tailwater elevation used of the HY-8 calculations was taken from the FIS profile for the 1% Annual Chance Flood (100-year flood). The starting WSEL at X-section AQ is listed as 893.8 and is also shown on the profile (sheet 41P).

Culvert Data

The existing culvert data was provided by the Ingham County Road Department. The existing culvert is a 16’5” span by 9’11” rise structural plate pipe arch. The hydraulic characteristics for this culvert were determined within HY-8 for standard span closest in size to this culvert.

Upstream Backwater/BFE

The estimated WSEL or BFE near the Gestamp Detention Basin (approximately 1000 feet upstream of the culvert) is assumed to the headwater elevation determined from the culvert analysis plus the rise in elevation of the Sycamore Creek channel from the available topographic data. The rise in elevation is 1 foot.

RESULTS

The following is a brief summary of the results of this analysis to estimate the 100-year floodplain elevation upstream of Kipp Road near the Gestamp detention basin.

Water Surface Elevation Estimate

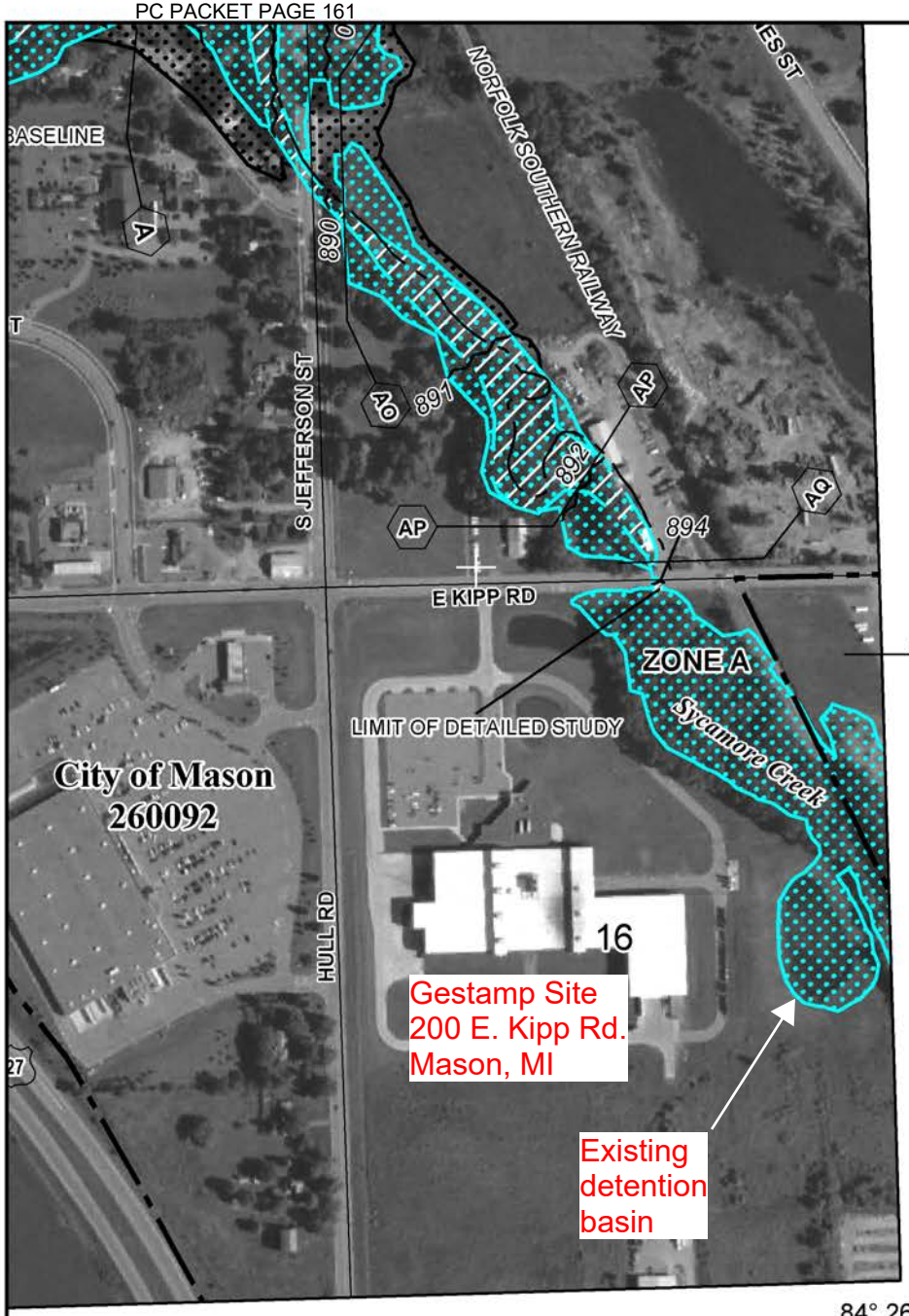
This table provides a summary of the water surface elevations for the 100-year storm event at the following locations: downstream end of the Kipp Road culvert, the upstream end of the Kipp Road culvert, and near the Gestamp detention basin.

- Starting WSEL (tailwater) Downstream End of Culvert 893.8 per FIS
- WSEL (headwater) Upstream End of Culvert 897.88 per HY-8
- WSEL near the detention basin 898.9

See the attached HY-8 Culvert Analysis Report.

CONCLUSION

The Zone A floodplain shown on Panel 0254D as including the Gestamp detention basin does not appear to be representative of the estimated floodplain elevation. As such, any excavation to increase the size of the detention storage within the basin will only include a minimal volume below the floodplain elevation.



MAP SCALE 1" = 500'

250 0 500 1000 FEET

0 150 300 METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0254D

FIRM

FLOOD INSURANCE RATE MAP

INGHAM COUNTY, MICHIGAN (ALL JURISDICTIONS)

PANEL 254 OF 425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MASON, CITY OF	260092	0254	D
VEVAY, TOWNSHIP OF	261327	0254	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
26065C0254D

EFFECTIVE DATE
AUGUST 16, 2011

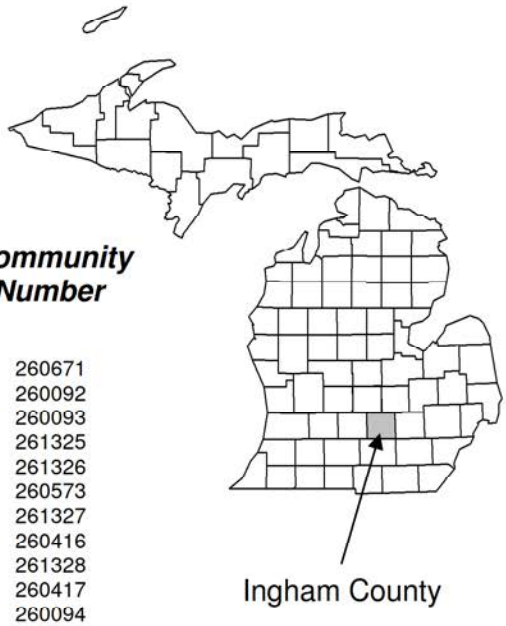
Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

FLOOD INSURANCE STUDY

INGHAM COUNTY, MICHIGAN

(ALL JURISDICTIONS)



Community Name	Community Number	Community Name	Community Number
Alaiedon, Township of	260670	Locke, Township of	260671
Aurelius, Township of	261321	Mason, City of	260092
Bunker Hill, Township of	261322	Meridian, Charter Township of	260093
*Dansville, Village of	261320	Onondaga, Township of	261325
Delhi, Charter Township of	260088	Stockbridge, Township of	261326
East Lansing, City of	260089	Stockbridge, Village of	260573
Ingham, Township of	261323	Vevay, Township of	261327
Lansing, Charter Township of	260632	Webberville, Village of	260416
Lansing, City of	260090	Wheatfield, Township of	261328
Leroy, Township of	260906	White Oak, Township of	260417
Leslie, City of	260091	Williamston, City of	260094
Leslie, Township of	261324	Williamstown, Township of	260095

*No Special Flood Hazard Areas Identified

Effective: August 16, 2011

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
26065CV000A

Table 2 – Summary of Discharges *(continued)*

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
RED CEDAR RIVER *(continued)*					
At Webberville Road	162	1,600	2,500	2,900	3,900
Just downstream with confluence of Wolf Creek	151	1,500	2,300	2,700	3,700
Just upstream of confluence with Kalamink Creek	133	1,400	2,100	2,400	3,300
REMY CHANDLER DRAIN / SANDERSON DRAIN					
At Soccer Complex Culvert	3.7	120	140	150	170
At Confluence with Sanderson Drain	4.5	140	180	200	290
At West Lake Lansing Road	2.6	130	190	220	270
SMITH DRAIN					
At Confluence with the Red Cedar River	2.28	240	400	465	600
SYCAMORE CREEK					
At Confluence with Red Cedar River	97.1	1,690	2,230	2,530	3,120
Just upstream of confluence with Rayner Creek	30.1	1,010	1,330	1,550	2,100
Just upstream of confluence of Willow Creek	17.7	655	845	980	1,300
UNNAMED TRIBUTARY					
At Confluence with Red Cedar River	1.68	190	270	305	375
Just upstream of Williamston Road	1.02	140	195	220	270
WILLOW CREEK					
At Confluence with Sycamore Creek	11.5	345	457	570	820

Stillwater elevations for Lake Lansing are shown in Table 3.

Table 3 - Summary of Stillwater Elevations

Flooding Source	Water Surface Elevations (Feet NAVD[1]) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
LAKE LANSING	852.8	853.0	853.1	853.7

[1] North American Vertical Datum of 1988

INCORRECT, NEVER CONVERTED TO NAVD88 -SHOULD BE 852.7. SEE EMAIL IN L:\SURVEY\FEMA FLOOD MAPS & FLOOD INSURANCE STUDIES\INGHAM COUNTY\

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SYCAMORE CREEK (CONTINUED)								
AL	88,723	141	779	2.0	889.8	889.8	889.8	0.0
AM	89,077	176	1,175	1.3	890.0	890.0	890.0	0.0
AN	90,227	190	1,383	1.1	890.2	890.2	890.2	0.0
AO	91,249	30	210	4.7	890.5	890.5	890.5	0.0
AP	92,750	122	352	2.8	891.8	891.8	891.8	0.0
AQ	93,147	17	83	11.8	893.8	893.8	893.8	0.0
UNNAMED TRIBUTARY								
A	965	409	681	0.4	863.9	858.4[2]	858.4[2]	0.0
B	1,687	302	190	1.6	863.9	861.8[2]	861.8[2]	0.0
C	2,638	82	173	1.8	863.9	862.5[2]	862.5[2]	0.0
D	4,661	6	34	6.4	867.2	867.2	867.2	0.0

[1]Feet above confluence with Red Cedar River

[2]Elevations without considering backwater effects from Red Cedar River

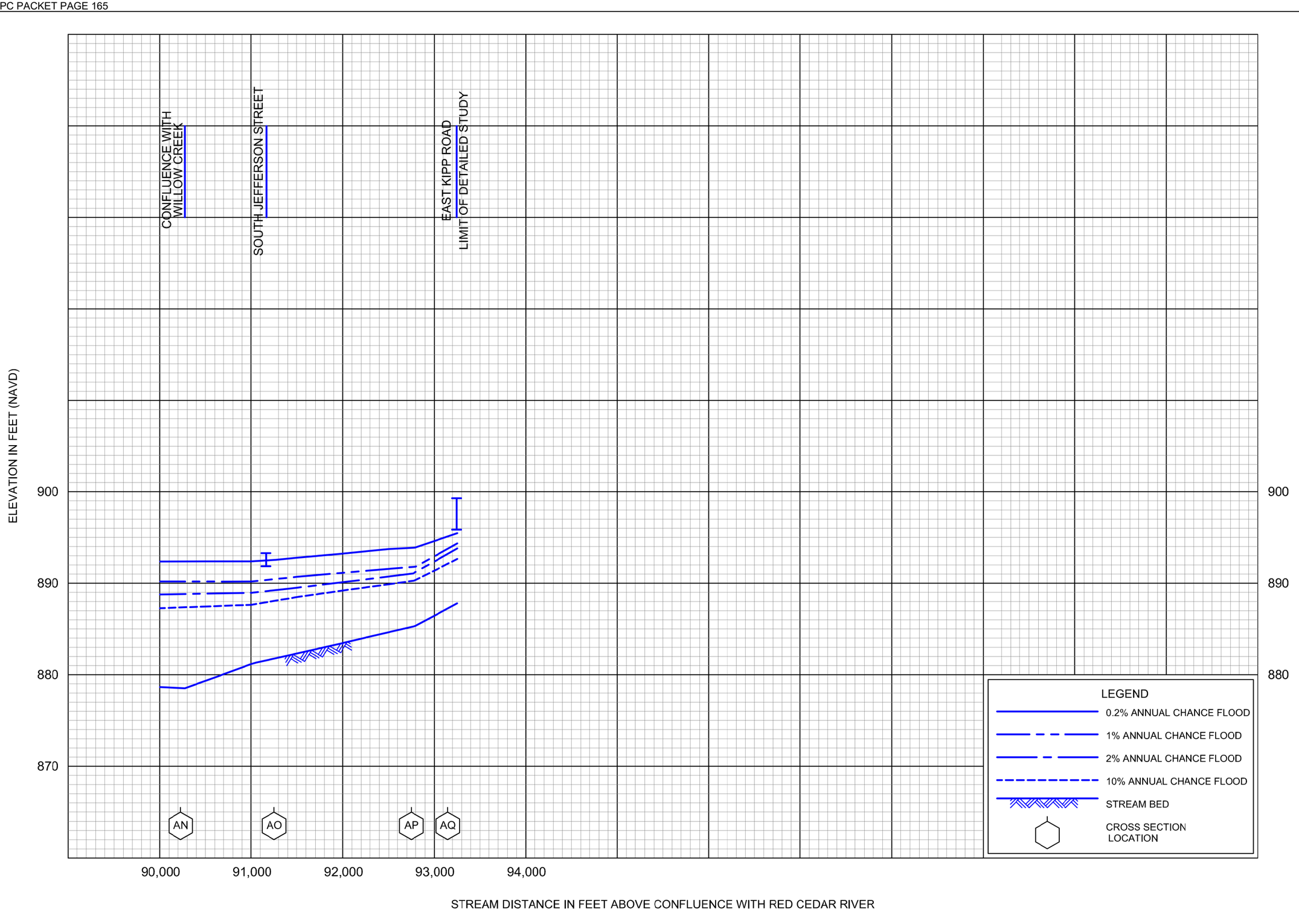
TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

INGHAM COUNTY, MI
(ALL JURISDICTIONS)

FLOODWAY DATA

SYCAMORE CREEK – UNNAMED TRIBUTARY



FLOOD PROFILES

SYCAMORE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

INGHAM COUNTY, MI

(ALL JURISDICTIONS)

41P

Alan Boyer

From: Troia, Dan <DTroia@ingham.org>
Sent: Tuesday, October 8, 2019 12:40 PM
To: Alan Boyer
Subject: RE: Kipp Road over Sycamore Creek
Attachments: 0406_001.pdf

Alan,
Kipp Rd is entirely ICRD jurisdiction. The sycamore Xing is a 16-5 x 9-11 multiplate

---

From: Alan Boyer <boyer@lsg-es.com>
Sent: Tuesday, October 8, 2019 9:18 AM
To: Troia, Dan <DTroia@ingham.org>
Subject: Kipp Road over Sycamore Creek

Dan

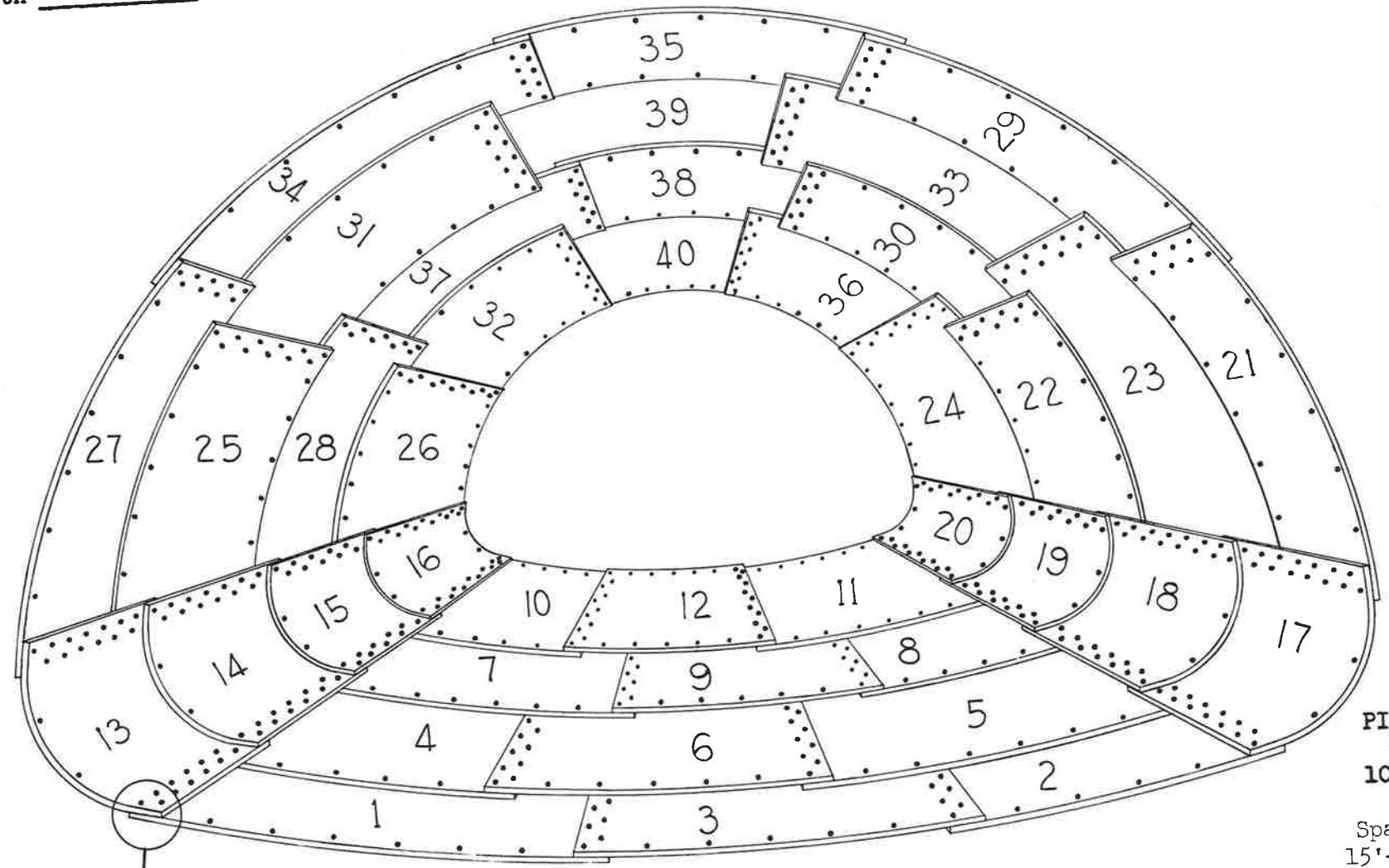
We are reviewing some floodplain information for Sycamore Creek upstream (south of) Kipp Road. Is Kipp Road under the jurisdiction of the ICRD or City of Mason? If ICRD, do you have information on the size of the structural plate pipe arch culvert where Kipp Road passes over Sycamore Creek?

Alan D. Boyer, PE
LSG Engineers & Surveyors
3135 Pinetree Rd, Suite D
Lansing, MI 48911
O 517-393-2902 x225
C 517-202-5629
boyer@lsg-es.com

THE FOLLOWING MULTI-PLATE PIPE-ARCH

Job No. _____ Span _____ Rise _____ Pi _____ Division Order No. _____

Length _____ No. of 8 ft. Rings _____ No. of 6 ft. Rings _____ No. of 6' corner plates _____

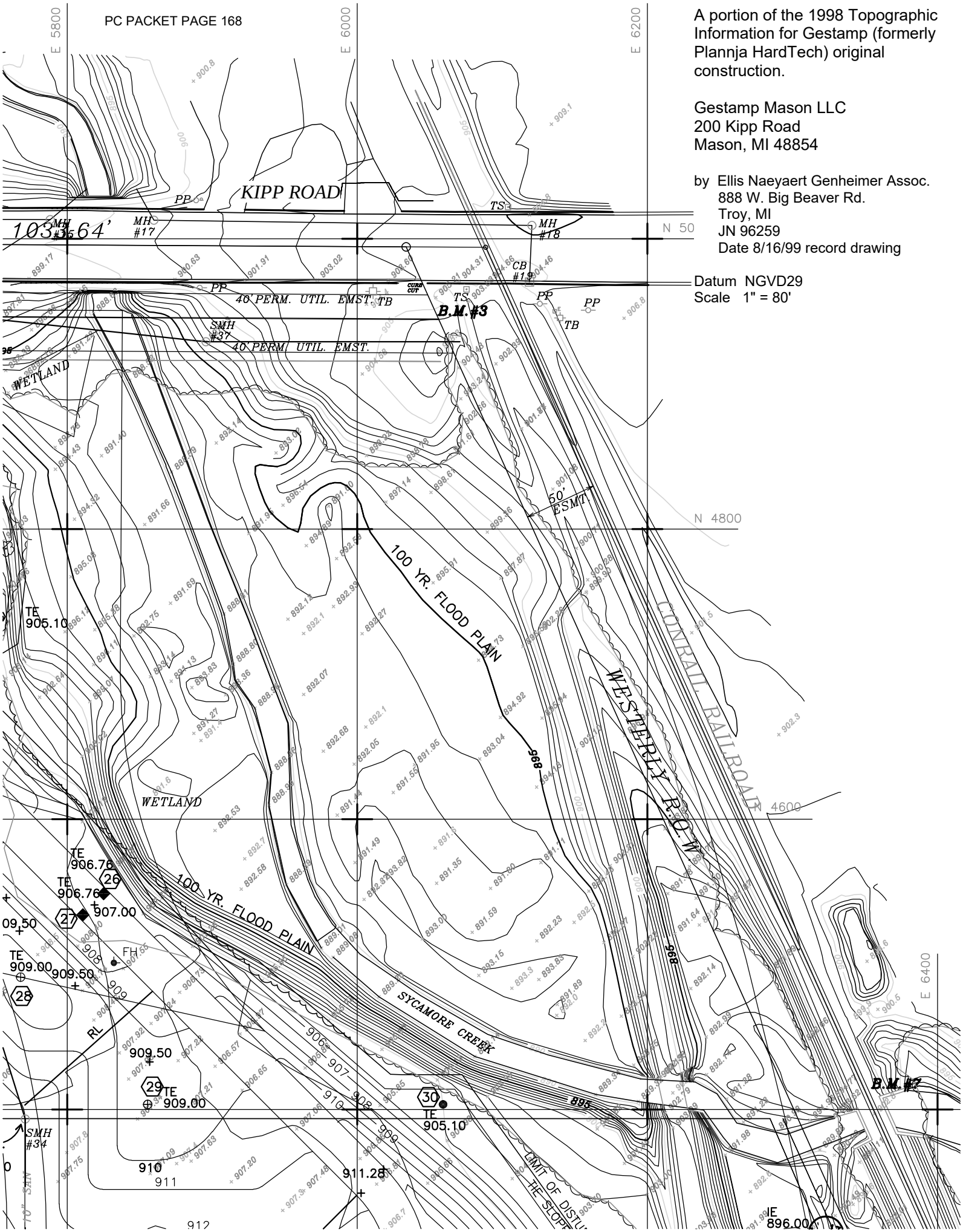


DRAWING SHOWS 165 PI STRUCTURE

PIPE-ARCH ASSEMBLY DRAWING FOR 10 PLATE STRUCTURES:

Span	Rise	Pi
15'-6"	9'-5"	153
15'-8"	9'-7"	156
15'-10"	9'-10"	159
16'-5"	9'-11"	162
16'-7"	10'-1"	165

See Back Page for Written Instructions



A portion of the 1998 Topographic Information for Gestamp (formerly Plannja HardTech) original construction.

Gestamp Mason LLC
200 Kipp Road
Mason, MI 48854

by Ellis Naeyaert Genheimer Assoc.
888 W. Big Beaver Rd.
Troy, MI
JN 96259
Date 8/16/99 record drawing

Datum NGVD29
Scale 1" = 80'

HY-8 Culvert Analysis Report

Project Notes

Project Title: Gestamp 2021 Expansion

Designer: A. Boyer, PE

Project Date: Tuesday, June 15, 2021

Notes: Purpose is to estimate the BFE on the upstream side of the Kipp Road culvert.

Crossing Notes: Kipp Road

This analysis was done to determine the headwater elevation resulting from the 100-year discharge of 980 cfs through the 16' 5" span by 9' 11" rise SPPA culvert under Kipp Road.

The Ingham County Road Department has provided information as to the size, shape and material of the culvert. The dimensions provided do not match those of a standard SPPA shape included in HY-8. The SPPA shape selected for this model is a 198"S x 132"R which is close in width to the 197"R by 119"R provided by the ICRD.

The FIS reported 100-year WSEL is 893.8 (NAVD88) at the downstream end of the culvert. The FIS profile shows the channel invert elevation as 888.0 (NAVD88). This was used as the downstream invert elevation of the culvert.

A survey of the site from 1998 notes the upstream channel bottom elevation as 888.63 (NGVD29) which is about 888.20 (NAVD88). This elevation is used as the upstream invert elevation of the culvert.

The survey also notes the Kipp Road elevations which have been converted to the NAVD88 datum.

The downstream channel side slopes and Manning's "n" values were manipulated until the downstream tailwater elevation for the 100-year discharge of 980 cfs was about 5.8 feet to match the corresponding flow depth from the FIS.

A. Boyer

LSG Engineers & Surveyors

20210615

Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 888.20 ft

Outlet Station: 70.00 ft

Outlet Elevation: 888.00 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Pipe Arch

Barrel Span: 198.00 in

Barrel Rise: 132.40 in

Barrel Material: Steel Structural Plate

Embedment: 0.00 in

Barrel Manning's n: 0.0340

Culvert Type: Straight

Inlet Configuration: Projecting

Inlet Depression: None

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
655.00	655.00	895.68	6.704	7.480	3-M2t	7.764	4.254	4.673	4.673	9.787	6.091
719.50	719.50	896.13	7.165	7.932	3-M2t	8.557	4.485	4.918	4.918	10.153	6.258
784.00	784.00	896.58	7.614	8.375	3-M2t	11.033	4.709	5.152	5.152	10.510	6.412
848.50	848.50	897.01	8.052	8.811	3-M2t	11.033	4.926	5.377	5.377	10.859	6.557
913.00	913.00	897.44	8.479	9.239	3-M2t	11.033	5.137	5.592	5.592	11.201	6.694
980.00	980.00	897.88	8.913	9.680	3-M2t	11.033	5.351	5.808	5.808	11.550	6.828
1042.00	1042.00	898.28	9.308	10.083	3-M2t	11.033	5.543	6.001	6.001	11.868	6.946
1106.50	1105.12	898.69	9.705	10.491	3-M2t	11.033	5.734	6.195	6.195	12.179	7.063
1171.00	1155.93	899.02	10.021	10.820	3-M2t	11.033	5.885	6.383	6.383	12.354	7.174
1235.50	1194.64	899.27	10.262	11.073	3-M2t	11.033	5.998	6.565	6.565	12.409	7.280
1300.00	1225.88	899.48	10.455	11.280	3-M2t	11.033	6.088	6.743	6.743	12.399	7.383

****

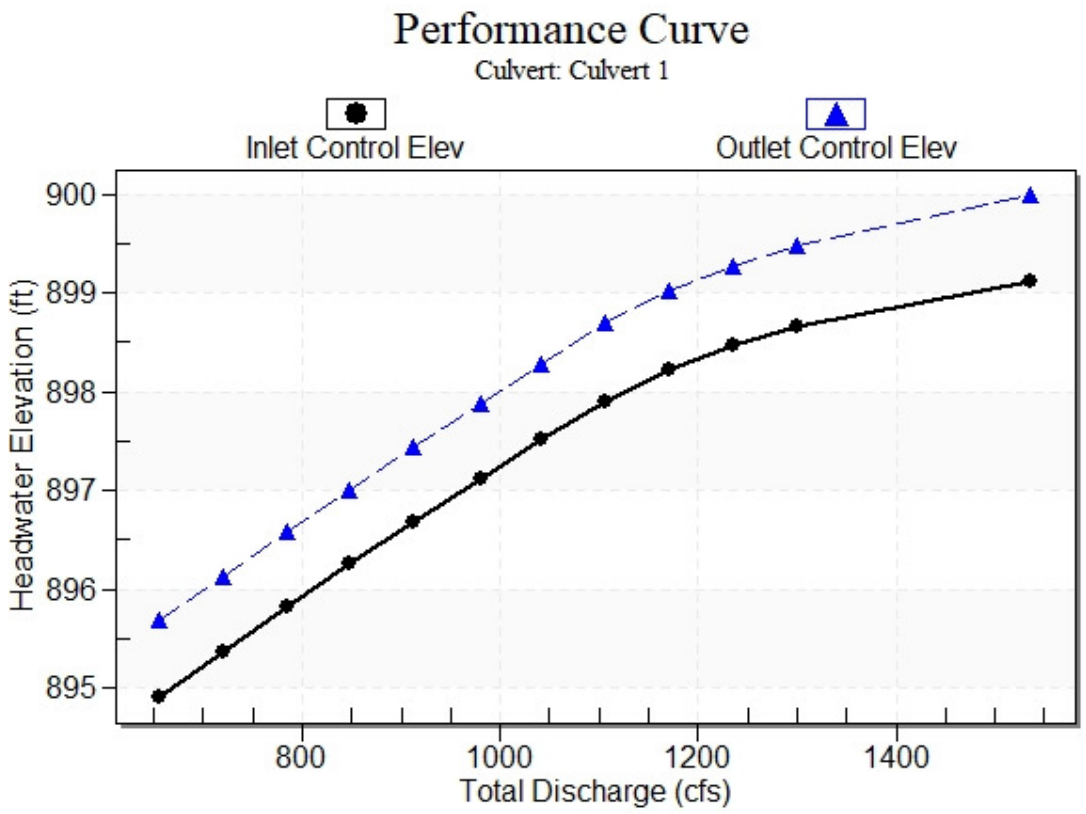
Straight Culvert

Inlet Elevation (invert): 888.20 ft, Outlet Elevation (invert): 888.00 ft

Culvert Length: 70.00 ft, Culvert Slope: 0.0029

****

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1

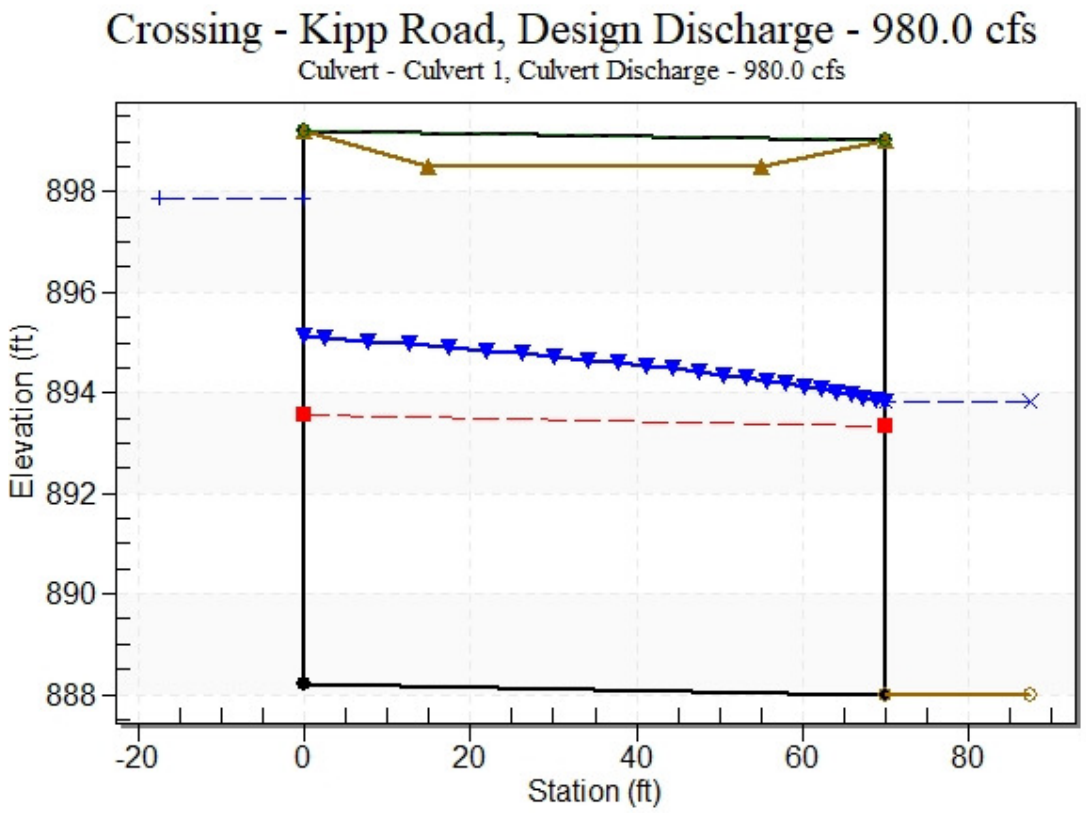


Table 2 - Downstream Channel Rating Curve (Crossing: Kipp Road)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
655.00	892.67	4.67	6.09	2.04	0.57
719.50	892.92	4.92	6.26	2.15	0.57
784.00	893.15	5.15	6.41	2.25	0.57
848.50	893.38	5.38	6.56	2.35	0.58
913.00	893.59	5.59	6.69	2.44	0.58
980.00	893.81	5.81	6.83	2.54	0.58
1042.00	894.00	6.00	6.95	2.62	0.58
1106.50	894.19	6.19	7.06	2.71	0.58
1171.00	894.38	6.38	7.17	2.79	0.59
1235.50	894.57	6.57	7.28	2.87	0.59
1300.00	894.74	6.74	7.38	2.95	0.59

Tailwater Channel Data - Kipp Road

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 16.00 ft

Side Slope (H:V): 1.50 (_:1)

Channel Slope: 0.0070

Channel Manning's n: 0.0450

Channel Invert Elevation: 888.00 ft

Roadway Data for Crossing: Kipp Road

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	0.00	898.50
1	80.00	899.60
2	160.00	900.20

Roadway Surface: Paved

Roadway Top Width: 40.00 ft

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 655 cfs

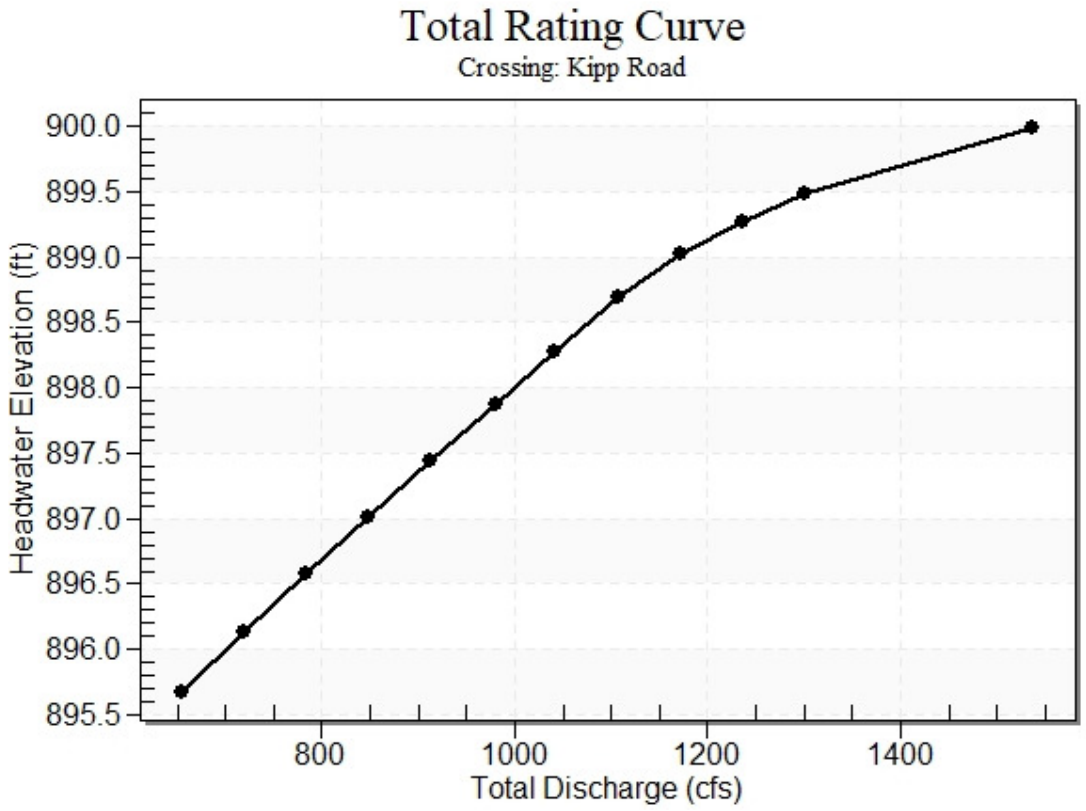
Design Flow: 980 cfs

Maximum Flow: 1300 cfs

Table 3 - Summary of Culvert Flows at Crossing: Kipp Road

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
895.68	655.00	655.00	0.00	1
896.13	719.50	719.50	0.00	1
896.58	784.00	784.00	0.00	1
897.01	848.50	848.50	0.00	1
897.44	913.00	913.00	0.00	1
897.88	980.00	980.00	0.00	1
898.28	1042.00	1042.00	0.00	1
898.69	1106.50	1105.12	1.20	5
899.02	1171.00	1155.93	14.94	6
899.27	1235.50	1194.64	40.57	6
899.48	1300.00	1225.88	73.67	6
899.60	1075.52	1075.52	0.00	Overtopping

Rating Curve Plot for Crossing: Kipp Road



MEMO

TO: Planning Commission
FROM: Elizabeth A. Hude, AICP
SUBJECT: Ordinance text amendments – Attached Garages
DATE: August 5, 2021

Architecture and streetscape are two of the most important elements in defining a place, promoting walkability, and influencing property values. Years ago, staff was asked by community members why Mason was allowing garages in front yards. After studying the various sections of the ordinance that influence placement of structures and parking on residential lots, it appeared that our ordinance did not explicitly allow for this, however, the language of certain sections could be argued as subjective and open to multiple interpretations.

The topic of projecting garages has been addressed in many communities around the country. Some have banned them completely, requiring that they be set-back from the front of the house by a certain number of feet (varies). Some have allowed them with limitations in certain residential zoning districts. The key factor in their decisions have been tied to concerns with front lawns and porches being increasingly dominated by expanded driveways that result in more parking in a front yard and the 'blank wall' of a garage door.

After meeting with the Home Builders Association in 2018, and conversations with our local residential developers, it is clear that an amendment is required to better articulate the community's expectations on attached garages that project into a front yard in front of a principal structure. We have worked cooperatively on the enclosed working draft of amendments to Chapter 94 Sec. 94-173(g) Accessory Structures and Chapter 100 Tables. This is presented here informally for discussion and will be revised based upon your input before it is formally presented for a public hearing and adoption.

Additional attachments include:

- Excerpts of The City of Mason Master Plan and Ordinance that influence placement of garages.
- MEDC article, Pedestrian Scale Design, this article also ran in the March/April 2021 edition of Michigan Planner.

CITY OF MASON
ORDINANCE NO. 2021-xxx

Draft: July 7, 2021

AN ORDINANCE TO AMEND THE MASON CITY CODE TO REVISE THE ACCESSORY STRUCTURES REGULATIONS OF CHAPTER 94-ZONING IN ASSOCIATION WITH THE LOCATION AND DESIGN OF RESIDENTIAL GARAGES, AND TO REVISE TABLE 100-1 OF CHAPTER 100 IN ASSOCIATION WITH SIDE YARD SET-BACKS AND TABLE 100-2 OF CHAPTER 100 IN ASSOCIATION WITH MINIMUM PRINCIPAL STRUCTURE WIDTH AND TO ADD TABLE 100-7 TO CHAPTER 100 IN ASSOCIATION WITH DESIGN STANDARDS FOR ATTACHED GARAGES IN A RESIDENTIAL ZONING DISTRICT.

THE CITY OF MASON ORDAINS:

SECTION 1
Restrictions on Residential Garages, Section 94-173(g)

Section 94-173(g) of the Mason City Code is hereby amended by the insertion of Section 94-173(g)(9), to read as follows:

"(9) *Restrictions on Residential Garages.*

a. For the purpose of this subsection, "front façade" shall mean the vertical surface of the first floor of a structure generally oriented toward the front lot line.

b. For the purpose of this subsection, "block" shall mean the group of structures along opposite sides of the roadway facing each between two cross streets, or one cross street and the end of the road.

c. On blocks where the existing garage layout is predominately (60% or more) detached, side-facing, recessed, or alley-loaded, attached garages shall meet the design standards in Table 100-7.

d. On blocks where the existing garage layout is predominately (60% or more) projecting into the front yard from the front façade of the principal structure:

i. A residential garage wall that is generally oriented toward the front lot line and includes no more than two doors or up to 20 feet in width for vehicle access, whichever is greater, shall not project more than half the depth of the garage not to exceed 12 feet. A third vehicle access, up to 10 feet wide shall be set-back two feet from the front façade of the garage.

ii. If on an attached residential garage that projects into a front yard beyond the wall of the principal structure, and the width is greater than 50% of the entire front façade, either:

i. Windows are required either in one panel section of the door or above the door equal to or greater than the width of garage door, or

ii. Additional architectural features will be incorporated into the doors or above the door.

e. The restrictions of this subsection shall not apply to what are commonly referred to as side-loaded garages provided there is compliance with all of the following:

i. Vehicle access doors are not visible from the point along the front lot line midway between the side lot lines and are oriented away from the front lot line.

ii. The garage does not extend toward the front lot line more than 20 feet beyond the dwelling's front facade.

iii. The side of the garage generally oriented toward the front lot line includes sufficient architectural features, such as windows, that portray a façade similar in character to the balance of the dwelling's façade generally oriented toward the front line.

f. The leading edge of a roofed porch a minimum of 5 feet deep and equal in length to the width of the principal structure as required in Table 100-2 may be applied toward meeting the depth requirement of an attached garage from the front façade."

SECTION 2
Minimum Side Yard Set-back, Table 100-1

The AG, RS-1, RS-2, RS-3, and R2F rows of Table 100-1 of the Mason City Code are hereby amended to read as follows:

Zoning District and Ordinance Section	Minimum Lot Size (sq. feet)	Minimum Lot Width (feet)	Minimum Lot Area Per Principal Structure (sq. feet)	Minimum Front Yard Setback (feet)	Minimum Side Yard Setback (feet)	Minimum Rear Yard Setback (feet)	Maximum % of Lot Coverage by all Structures
AG Sec. 94-122	30,000	225	30,000	30	~~15~~ (1)	40	15
RS-1 Sec. 94-123	12,000	90	12,000	30	~~15~~ (1)	40	30
RS-2 Sec. 94-123	9,600	75	9,600	25	~~10~~ (1)	35	30
RS-3 Sec. 94-123	8,500	65	8,500	25	(1)	35	35
R2F Sec. 94-124	8,500	65	8,500	25	(1)	35	35

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SECTION 3
Minimum Width of Principal Structures, Table 100-2

The AG, RS-1, RS-2, RS-3, and R2F rows of Table 100-2 of the Mason City Code are hereby amended to read as follows:

Zoning District and Ordinance Section	Maximum Height Principal Structure (feet)	Maximum Height Accessory Structure (feet)	Minimum Floor Area Per Dwelling Unit (sq. feet)	Minimum Width Principal Structure (feet)	Minimum Internal Height Principal Structure (feet)
AG Sec. 94-122	35(4)	25(5)	1,200(6)	~~24~~ 20(15)	7.5
RS-1 Sec. 94-123	35	25(5)	1,200(6)	~~24~~ 20(15)	7.5
RS-2 Sec. 94-123	35	25(5)	1,000(6)	~~24~~ 20(15)	7.5
RS-3 Sec. 94-123	35	25(5)	800(6)	~~24~~ 20(15)	7.5
R2F Sec. 94-124	35	25(5)	800(6), (7)	~~24~~ 20(15)	7.5

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SECTION 4
Minimum Width of Principal Structures, Table 100-2 Footnotes

Table 100-2 of the Mason City Code is hereby amended by the insertion of Footnote (15), to be applied to all cells under the *"Minimum Width Principal Structure (feet)"* column that require a minimum 20-foot structure width, to read as follows:

"15. The principal structure width shall be the distance between the farthest opposing walls of the front façade of the structure. By example, a dwelling does not comply with the minimum 20-foot principal structure width requirement in the case where dwelling has a front façade of 18 feet in length even though the dwelling may expand to a 50-foot width approximately 15 feet further toward the rear of the dwelling.

(a) "Front façade" shall mean the vertical surface of the first floor of the structure generally oriented toward the front lot line.

(c) See Section 94-173(g) regarding restrictions on garages comprising a portion of the required minimum 20-foot principal structure width."

SECTION 5

Design Standards for Attached Garages in a Residential Zoning District, Table 100-7

Add a new Table 100-7 to read as follows:

Front-Loaded Attached Garages	
Distance garage is recessed from the street-facing facade enclosing the garage (ft, min)	1 for up to than two doors or up to 20 feet in width for vehicle access, whichever is greater; A third vehicle access, up to 10 feet wide shall be set-back two feet from the front façade of the garage.
Percent of front facade enclosing the principal use (dwelling) located closer to the front lot line than the attached garage (min)	50%
Number of street-facing garage doors (max)	3
Garage door width for 2-car garage (ft, total max)	20
Garage door width for 3-car garage (ft, total max)	30
Side-Loaded Attached Garages	
Offset from facade enclosing the principal use (dwelling) (ft, min)	4
Number of windows in garage facade (min)	2

SECTION 6

Ratification

The remaining provisions of Mason City Code, and all amendments thereto, are hereby ratified and reaffirmed.

SECTION 7

Severability

In the event that any provision of this amending ordinance is held to be unconstitutional or void for any reason by a court of competent jurisdiction, that provision shall be struck from the amendment and severed and the remaining provisions shall be enforced according to their terms and provisions.

SECTION 8

Effective Date

This amendment ordinance shall be effective seven (7) days after adoption and publication as provided by law.

****

The foregoing Ordinance was moved for adoption by Council Member _____ and supported by Council Member _____, with a vote thereon being: YES ( ) NO ( ), at a regular meeting of the City Council held pursuant to public notice in compliance with the Michigan Open Meetings Act, on the _____ day of _____, 2021. Ordinance No. 2xx declared adopted this _____ day of _____, 2021.

_____
Russell Whipple, Mayor

_____
Sarah J. Jarvis, City Clerk

Excerpts from the City of Mason Master Plan and Ordinances related to

Attached Garages (Accessory Structures)

MASTER PLAN

Community Character, Historic Preservation and the Environment p. 2-3

GOAL: Preserve the quiet, historical, and small-town character of Mason along with the integrity of its environmental resources. Objectives 1) Encourage land development designed in scale with existing developed areas and the dominant character of the City, through reasonable standards addressing density, building size, height, architectural design, setbacks, signage, opens space, and other development features. 2) Preserve the small-town and historic character of the Court House square and its visual role in defining the City's downtown business area, through appropriate land use and development standards. 3) Support the efforts of the City Historic District Commission and encourage the maintenance and preservation of historically significant structures. 4) Maintain a structurally sound housing stock and encourage the rehabilitation or removal of blighted structures. 5) Ensure that the quantity and quality of new development does not unreasonably create increases in air, light, noise, land, and surface and underground water pollution, or the degradation of environmental resources. 6) Continue efforts to enhance a greater sense of community identity and character through streetscape improvements to commercial and other activity centers, and provide attractive entranceways into the City. 7) Encourage the continuation of farms and agricultural operations in peripheral areas of the City through complementary zoning provisions, until alternative use of the farm acreage is deemed more beneficial. 8) Provide necessary code development and ordinance enforcement to ensure the general maintenance and appearance of the City. 9) Maintain and beautify established and new parking areas through appropriate landscaping and screening. 10) Encourage landscaping and screening programs, in association with new commercial and industrial development, to minimize negative impacts on community character. 11) Encourage the preservation of open spaces and natural resources (such as woodlands, wetlands, and stream corridors) as part of the land development process, including the use of clustered housing design.

Residential Development p. 2-4

GOAL: Establish a residential environment that recognizes the varied economic and family structure conditions of current and future residents while affording persons and families with healthy and stable surroundings that nurture personal growth. Objectives: 1) Identify areas for future residential use that, with appropriate levels of public services and surrounding land use conditions, encourages healthy residential environments. 2) Provide opportunities for varied housing types and patterns to address the varied housing needs of current and future residents. 3) Discourage residential development that relies on on-site sewage disposal. In the absence of public sewer, coordinate housing densities with the natural carrying capacity of the land. 4) Encourage innovative residential development that incorporates mixed housing forms, while preserving natural resource systems , open spaces, and the City's rural and small-town character. 5) Prevent random commercial encroachment into established residential neighborhoods. 6) Encourage the upkeep of residential structures and yards, and the rehabilitation of blighted areas. 7) Encourage the preservation of historically significant dwellings. 8) Discourage main thoroughfares through residential areas and the use of residential streets for commercial or industrial traffic.

ORDINANCES

Section 1-2 Definitions

Accessory structure means a structure located on the same lot as the principal structure, the use of which is customarily incidental or secondary to the principal structure or use.

Accessory use means a use of land or of a structure or portion thereof which is customarily and naturally incidental to, subordinate to, and devoted exclusively to the principal use of the land or building and located on the same lot with the principal use.

Building line means a line established on a parcel parallel to an adjacent public right-of-way or adjacent property line for the purpose of prohibiting construction of a structure between such line and the right-of-way or property lines. Building line is commonly referred to as the setback line.

Carport means a partially open structure intended to shelter one or more vehicles. Such structures shall comply with all yard requirements applicable to a private garage.

Driveway means a path of travel connected to a public or private street over which a vehicle may be driven to access one or more parcels of land.

Front yard means an open, unoccupied space extending the full width of the lot between the front lot line and the nearest line of the principal building on the lot (See figure 100-101 in ch. 100). The depth of the front yard shall be measured at right angles to the property line in the case of a straight property line and radial to the property line in the case of a curved property line. On a corner lot, the front yard shall be the yard fronting on a street with the largest setback.

Garage means an accessory building used for parking or storage of vehicles in connection with the permitted use of the principal building.

Parking lot means an off-street, surface facility providing vehicular parking spaces for more than six vehicles along with adequate drives and aisles for maneuvering so as to provide for entrance and exit access.

Parking space means a clearly delineated land area exclusive of driveways and aisles, so prepared as to be usable for the parking of a motor vehicle, and so located as to be readily accessible to a public street or alley. A parking space may be located in a parking lot or a parking structure.

Principal structure means the main structure to which the premises is devoted.

Principal use means the main use to which a premises is devoted and the principal purpose for which the premises serves or is intended to serve.

Rear lot line is generally considered to be the line that is opposite from the front lot line and also farthest in distance from the front lot line.

Rear yard means an open, unoccupied space extending the full width of the lot between the rear line of the lot and the rear line of the principal building on the lot. (See figure 100-101 in ch. 100). The depth of the rear yard shall be measured at right angles to the rear property line.

Right-of-way means land reserved, used or to be used for a street, alley, walkway or other public purpose.

Setback means the minimum horizontal distance between a road right-of-way line, an easement line, or an adjacent property line and a building or structure. In a condominium development, the minimum horizontal distance between a boundary line of the condominium lot and a building or structure.

Setback line. See "building line".

Side yard means an open, unoccupied space on the same lot with the principal building, between the side line of the principal building and the adjacent side line of the lot and extending from the rear line of the front yard to the front line of the rear yard. (See figure 100-101 in ch. 100). The width of the side yard shall be measured at right angles to the side property line.

Sidewalk means that portion of the street between the curb, or the lateral line of the roadway, and the adjacent property line, intended for the use of pedestrians.

Structure means anything constructed or erected the use of which requires location on the ground or attachment to something having location on the ground. A structure does not include a surface parking area, driveway, steps, patio or deck constructed at grade.

Yard is an open space on the same lot with a structure.

Sec. 6-122. Sidewalks and driveways.
All sidewalks, walkways, stairs, driveways, parking spaces and similar areas shall be kept in a proper state of repair, and maintained free from all hazardous conditions other than a natural accumulation of ice and snow.

Ch. 70 ARTICLE II. EXCAVATIONS AND CURB CUTS
Sec. 70-36. Permit required for curb cut.
No person shall make any opening in or through any curb in any city street, alley or public place without first obtaining a written permit from the director of public works. The fee for such permit shall be as established by resolution but if such permit is requested at the time of making application for a building permit for the same premises, the payment of such fee shall not be required; however, the waiver of the fee shall not void any other provisions of this article. No permit shall be granted in the following cases, except by special permission of the council:

(1) When such curb cut is to serve a one-car garage and is intended to be more than 12-feet wide.
(2) When such cut is to serve a two-car garage and is intended to be more than 20-feet wide.

(3) When such cut is to be made permanent, for any other purpose, and is intended to be more than 24-feet wide.

(4) When such cut is to be made permanent, and in the opinion of the director of public works, will interfere with the safety of the public.

All such curb cuts shall be performed under the supervision of the director of public works or his inspector, and as he shall direct and to his satisfaction.

(Ord. No. 47-A-95, § 2, 12-18-1995)

Sec. 94-121 General intent and purpose, permitted uses, and dimensional regulations.

(a) General intent and purpose. It is the purpose of every district defined in this article to protect sensitive environmental resources and to ensure that all uses are adequately served by public facilities and services including sewage disposal, potable water, fire protection, streets, and sidewalks. Each district is intended to accommodate permitted uses and structures in a manner that minimizes negative impacts on abutting properties and complements the unique character and identity of the city through appropriate architectural design including building size, building height, building materials, building location, signage, landscaping, buffering, safe circulation of vehicular and pedestrian traffic, and other pertinent development features.

(b) Permitted uses. The use regulations established in this article are uniform throughout this chapter for each zoning district and shall be applied consistently to each class of land, building or structure within each district in order to promote the public health, safety, and general welfare of the residents of the city. A use of land or structures not specifically mentioned in the provisions of this chapter shall, upon application, be classified by the zoning official who may seek the recommendation of the planning commission prior to making a final determination. Uses that are contrary to federal, state or local laws or ordinances are prohibited. Within each zoning district there are three permitted categories of use defined as follows:

(1) Uses permitted by right. No structure or land shall be used and no structure constructed except for one or more of the uses specified as uses permitted by right unless otherwise provided for in this chapter.

(2) Accessory uses. A use of land or of a structure, or portion thereof, which is customarily and naturally incidental to, subordinate to, and devoted exclusively to the principal use of the land or structure and located on the same lot with the principal use.

(3) Uses authorized by special use permit. A use of land or of a structure, or portion thereof, which may be permitted through the application and approval of a special use permit as provided for in article VI of this chapter.

Sec. 94-122,123,124, 125 (Residential uses)

(e) Development standards. Any use of land or structures in this district shall comply with the general development standards of section 94-121(c) of this chapter. In addition, the following standards shall also apply to any use of land or structures in this district.

(1) The roof pitch ratio of the principle structure shall be a minimum of four foot vertical rise to 12 foot horizontal run.

(2) The principle structure shall be attached to a solid foundation.

(3) A principle residential structure shall provide a minimum of 15% of the total living space area as non-living space available for storage.

(4) A principle residential structure shall be constructed to be compatible in design and appearance with conventional onsite constructed structures.

94-172. General regulations

(d) *Site development regulations*.

(1) Residential front yard use. On any lot in a residential district and on any lot used for residential purposes, that portion lying in front of the building line shall be used only for landscaping purposes and nothing other than landscaping materials, permitted signs and permitted driveways shall be parked, placed, erected, or planted thereon.

(3) Vision clearance across corner lot. (See figure 100-103 in chapter 100).

a. Nothing shall interfere with traffic visibility across the triangular area of a lot formed by the intersection of two public or private streets or combination thereof measuring 25 feet along the road right-of-way lines in each direction from the corner of said lot. Nothing shall interfere with traffic visibility across the triangular area adjacent to the intersection of a public or private street and a driveway formed by measuring seven feet along the driveway lines and 60 feet along the road right-of-way in each direction from the edge of said driveway. No fence, structure, or planting taller than three feet shall be erected or maintained in said triangular areas except trees with branches no lower than eight feet above the ground. However, nothing shall be permitted in the triangular area adjacent to a driveway.

(5) Rear yard use. A rear yard may be occupied by buildings or structures for accessory uses permitted in the district provided that such structures comply with subsection 94-173(g)(4) and other applicable provisions of this chapter and the building code.

Sec. 94-173 Supplemental Use Regulations

(d) *Site development regulations*.

(1) *Residential front yard use.* On any lot in a residential district and on any lot used for residential purposes, that portion lying in front of the building line shall be used only for landscaping purposes and nothing other than landscaping materials, permitted signs and permitted driveways shall be parked, placed, erected, or planted thereon.

(g) Accessory structures. Any garage or other structure used for motor vehicle storage or as an accessory structure shall satisfy the following:

(1) Authorized accessory structures may be erected as a part of the principal structure, may be connected to the principle structure by a roofed over porch, patio, breeze way, or similar structure, or may be completely detached from the principle structure. If connected to the principal structure, an accessory structure shall be made an integral part of it, and shall comply in all respects with the requirements applicable to the principal structure. An accessory structure not attached and not made a part of the principal structure shall not be nearer than ten feet from any other structure on the same lot and shall also comply with the front, rear and side yard requirements of this chapter.

(2) In all residential zoning districts, the storage of commercial vehicles in accessory structures shall be limited as provided in subsection 94-292(d) of this chapter.

(3) Space in a garage accessory to a multiple-family unit or a motel shall not be rented out except to occupants of the principal dwelling.

(4) The total lot coverage of all accessory structures shall not exceed 35 percent of the area of any rear yard.

(5) Side yard. In all districts accessory structures shall not be erected nearer to a side lot line than the permitted setback distance for the district unless otherwise permitted by this chapter. In the RS-1, RS-2,

RS-3, and R2F districts, an accessory structure may be erected not closer than two feet from the side lot lines if the following requirements are satisfied:

a. The accessory structure is not attached to, and is located completely behind, the associated principal structure.

b. The interior and/or exterior surfaces of the wall facing a side lot line are constructed of fire-resistant material as approved by the building official if any portion of that wall is closer than five feet from a side lot line.

(6) Rear yard. In all districts accessory structures shall not be erected nearer to a rear lot line than the permitted setback distance for the district unless otherwise permitted by this chapter. In the RS-1, RS-2, RS-3 and R2F districts, an accessory structure may be erected nearer to a rear lot line than the permitted setback distance for the district provided the accessory structure is not attached to, and is located completely behind, the associated principal structure, and pursuant to the following:

a. Where there is a public alley abutting the rear of a lot for the full width of that lot, an accessory structure may be erected not closer than ten feet from a rear lot line.

b. Where there is not a public alley abutting the rear of a lot for the full width of that lot, an accessory structure may be erected not closer than five feet from a rear lot line.

(7) Corner lot. Where the rear line of a corner lot coincides with the side line of an adjoining lot in a residential district, an accessory building shall not be closer than the side yard setback requirement of said adjoining lot.

(8) Accessory structures shall not include structures, fabrications, items, or enclosures originally designed for other purposes. The following are specifically prohibited from being used as accessory structures in the city.

a. Mobile home.
b. Travel trailers.
c. Former vehicles such as buses and ambulances.
d. Motor homes.
e. Semi-trailer.
f. Other similar structures, fabrications, items, or enclosures.

Sec. 94-176. Supplemental access regulations.

(a) Purpose. The purpose of this section is to establish standards and regulations to encourage reasonable access to land uses and buildings according to their access needs, while also ensuring safe and efficient travel within and through the city including minimizing disruptive and potentially hazardous traffic conflicts; ensuring safe access by emergency vehicles; and protecting the substantial public investment in the street system by preserving capacity and avoiding the need for unnecessary and costly reconstruction that disrupts business and traffic flow.

(b) Definitions. For the purposes of this section, the following terms shall have the following meanings:

(1) Access point. The connection at the street right-of-way line between the street and the connecting driveway, service drive, other street, or other vehicular access way.

(2) Service drive. A local street or private road typically located in front of principal buildings (front service drive) and parallel to a thoroughfare classified as an arterial, for providing access to abutting properties while also controlling access to the arterial through reduced access points to the arterial. In the case of a rear service drive, the service drive is located behind such buildings.

(c) Application of this section. The standards and regulations of this section shall be applied by the body or body(s) designated authority by this chapter to approve development plans including the construction of homes and businesses, platted and condominium subdivisions, and institutional uses.

Such approving bodies shall coordinate their review of specific development proposals with the standards and regulations of this Section, and the review by other agencies as required by law including the Michigan Department of Transportation.

(d) General standards for access.

(1) All lots created in the city shall have frontage on a public street, or a private road approved by the city, and take their lot access from such frontage so as to provide safe, convenient access for fire protection, other emergency vehicles, and any required off-street parking. Curb cuts and driveways accessing public roads shall be located only upon the approval of the city and appropriate state authorities as required by law.

(2) All plans for structures to be erected, altered, moved or reconstructed, and for the use of premises within the city shall contain a plan for the proposed access to the premises which shall be part of the site plan required pursuant to this chapter. No plan shall be approved unless such access is onto a dedicated public street or an approved private road.

(3) Access drives shall enter perpendicular to the existing public street or private road except where prohibited by physical conditions.

(4) Wherever a corner lot exists at the intersection of two streets, access shall be taken from the street presenting the least hazard.

(5) The location of new access points shall conform to road improvement plans or corridor plans that have been adopted by a public body.

(e) Standards for residential uses.

(1) For any access point or driveway located less than two feet from an adjoining property line, provisions shall be made to the satisfaction of the building official to control water runoff onto the adjoining property.

(2) An access point serving a single-family dwelling shall be a minimum of 15 feet from the nearest right-of-way line of an intersecting street.

(3) A driveway serving a single-family or two-family dwelling shall be a minimum of 9 feet wide.

(4) A lot containing one single-family dwelling or one two-family dwelling shall have no more than one access point to the street upon which it relies for access.

(5) No more than 25 dwellings shall be served by a single access point except upon finding that a second alternative and reasonable means of emergency vehicle access is available.

(6) In the case of the development of a platted or condominium subdivision, all lots made part of such subdivision shall have their access point from roads within such subdivision.

Sec 94-292 General Off-Street Parking and Loading Regulations

(j) *Site development standards*. All off-street parking areas shall be designed, constructed and maintained in accordance with the following standards and requirements:

(1) Parking in the required front yard is prohibited in the RM, C-1, O-1, and O-2 districts. For residential uses in the AG, RS-1, RS-2, RS-3, and R2F districts, that portion of a *regularly constructed driveway extending in front of the required front yard setback line may be used for parking by up to two passenger vehicles*. Front yard parking in the C-2, C-3, M-1, and M-2 districts is prohibited except upon a finding by the planning commission that such parking is a critical component of the operation of the particular use and that adequate provisions are included for the screening and landscaping of such parking area.

(1) Required parking areas including driveways shall be constructed from materials that provide a durable smooth and dustless surface, shall be drained properly, and shall be maintained in a safe and usable condition.

Table 100-1, Lot Dimensional Regulations

Zoning District and Ordinance Section	Minimum Lot Size (sq. feet)	Minimum Lot Width (feet)	Minimum Lot Area Per Principal Structure (sq. feet)	Minimum Front Yard Setback (feet)	Minimum Side Yard Setback (feet)	Minimum Rear Yard Setback (feet)	Maximum % of Lot Coverage by all Structures
AG Sec. 94-122	30,000	225	30,000	30	15	40	15
RS-1 Sec. 94-123	12,000	90	12,000	30	15	40	30
RS-2 Sec. 94-123	9,600	75	9,600	25	10	35	30
RS-3 Sec. 94-123	8,500	65	8,500	25	(1)	35	35
R2F Sec. 94-124	8,500	65	8,500	25	(1)	35	35
RM Sec. 94-125	8,500	65	8,500(2)	25	15	35	35

Table 100-2. Building Dimensional Regulations.

Zoning District and Ordinance Section	Maximum Height Principal Structure (feet)	Maximum Height Accessory Structure (feet)	Minimum Floor Area Per Dwelling Unit (sq. feet)	Minimum Width Principal Structure (feet)	Minimum Internal Height Principal Structure (feet)
AG Sec. 94-122	35(4)	25(5)	1,200(6)	24	7.5
RS-1 Sec. 94-123	35	25(5)	1,200(6)	24	7.5
RS-2 Sec. 94-123	35	25(5)	1,000(6)	24	7.5
RS-3 Sec. 94-123	35	25(5)	800(6)	24	7.5
R2F Sec. 94-124	35	25(5)	800(6)	24	7.5
RM Sec. 94-125	35	15	(7)	-	-

Footnotes to table 100-1 and table 100-2.

1 Ten percent of the actual lot width or ten feet, whichever is smaller.

2 Up to three dwelling units allowed per building on an 8,500 sq. ft. lot. Increase the required lot area per building by 4,000 sq. ft. per dwelling unit in excess of three dwelling units, or by 3,000 sq. ft. per dwelling unit in excess of three dwelling units located within a planned residential development or a planned unit development.

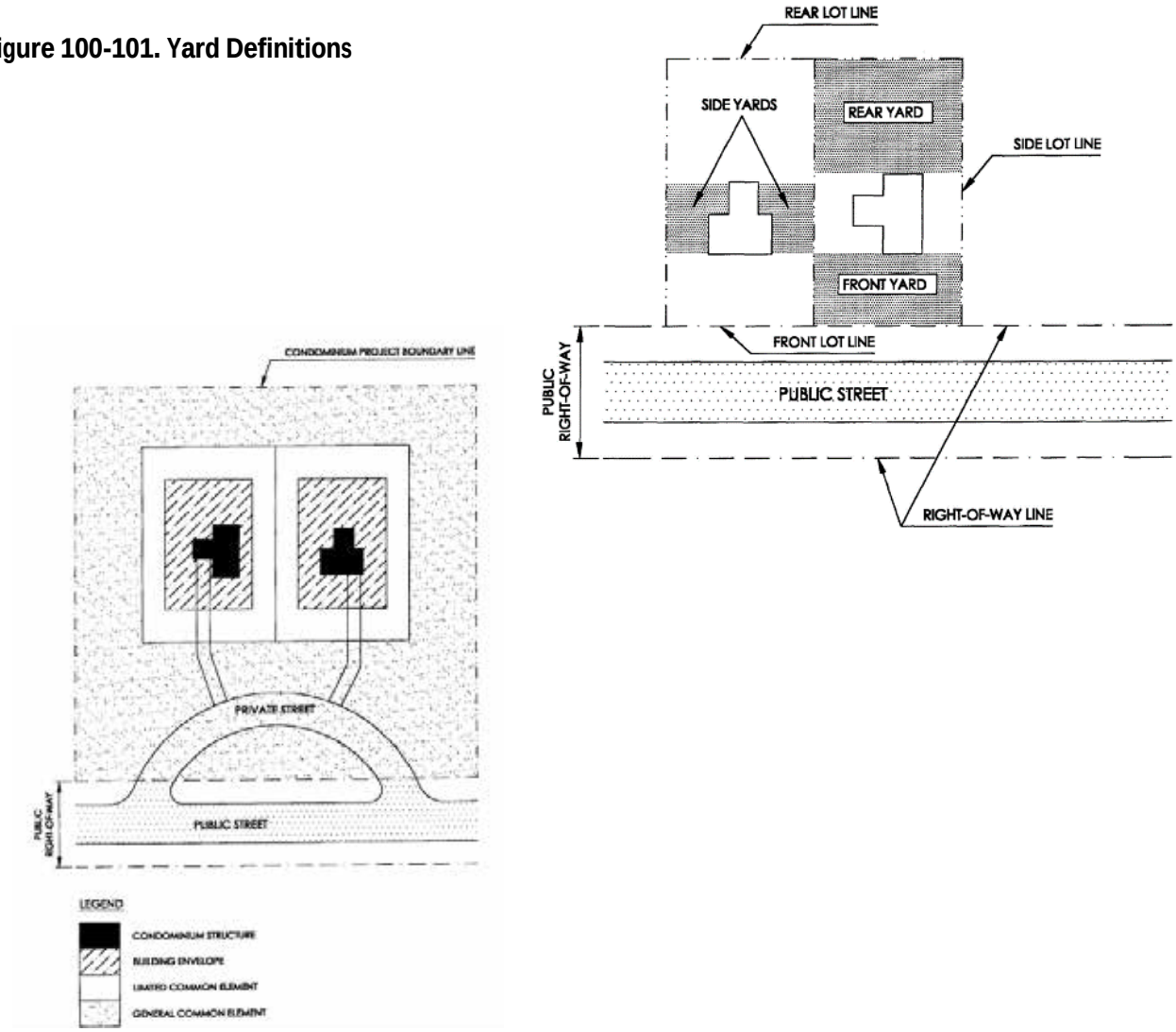
3 20 feet when adjacent to residentially used or zoned land.

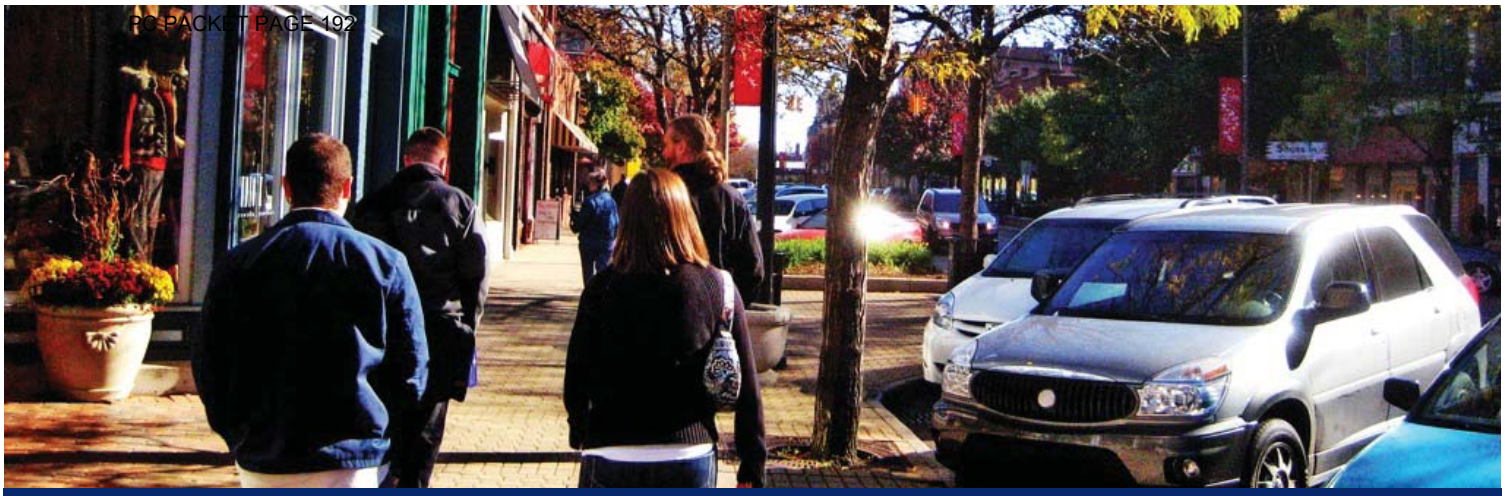
4 Structures for agricultural operations, such as barns or silos, may be permitted up to a building height of 75 feet.
5 Accessory structures with a roof pitch flatter than one to two rise to run shall have a maximum height of 15 feet.
6 Exclusive of basement areas, attics, attached garages, breezeways, enclosed or unenclosed porches, and accessory structures.
7 For two-family and multiple-family uses, minimum gross floor area per dwelling unit shall be as follows:
(a) Efficiency unit: 300 sq. ft.
(b) One bedroom unit: 400 sq. ft.
(c) Two bedroom unit: 600 sq. ft.
(d) Three or more bedroom unit: 800 sq. ft.
8 May be increased if front, side, and rear yard setbacks are increased an equal amount.
9 The maximum height of an accessory structure in the PUD district shall be determined by the principal use associated with the accessory structure as follows:
(a) For single-family or two-family residential uses, the RS-1 maximum height shall apply.
(b) For manufacturing uses, the M-1 maximum height shall apply.
(c) For all other uses the maximum shall be 15 feet.
10 Lot area may be decreased up to 20% to a minimum of 4,400 square feet provided that for each square foot decrease an equal or greater amount of land shall be dedicated as open space. Said open space shall be in addition to any other required open space.
11 The site plan approving body may reduce the required front yard setback by a maximum of 50% upon finding that the reduced setback is in keeping with predominant development patterns in the immediate area and such reduction would encourage a more uniform, unified and orderly development pattern.
12 In addition to the required maximum lot coverage regulations, a minimum of 10% of hte lot or parcel shall be dedicated to vegetated open space such as lawns, shrubs and tree plantings, and similar open space. This minimum 10% standard shall be met without the reliance on required setbacks, buffers, and landscaping.
13 In industrial parks in the M-1 and M-2 districts, the required minimum lot area shall be 20,000 square feet and the minimum lot width shall be 100 feet.
14 An additional 5 feet 0 inches maximum height may be added for residential occupancy, with a minimum 10 feet 0 inches setback from all sides of the building face and a maximum square footage equal to 25% of the grade floor gross area.
(Ord. No. 135, § 2(5.1), 5-21-2001; Ord. No. 152, 5-1-2006; Ord. 221, 11-12-2018; Ord. No. 230, 9-28-2020)

Table 100-5. Parking Space Requirements

Land Use	*Required Parking Spaces*
Single Family Dwelling	2 per dwelling unit
Two-Family Dwelling	1.4 per dwelling unit for efficiency and one-bedroom units 2 per dwelling unit for two or more bedroom units
Multiple Family Dwelling	1.4 per dwelling unit for efficiency and one-bedroom units 2 per dwelling unit for two or more bedroom units
Rooming house	2 per dwelling unit, plus 1 per rooming unit

Figure 100-101. Yard Definitions





Pedestrian Scale Design and the Public Realm

MICHIGAN ECONOMIC DEVELOPMENT CORPORATION

What you will learn:

What does pedestrian scale mean

Why is it important

What are the different elements of design

How requiring specific design standards will yield better projects

How to implement design standards

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The pedestrian perspective is one of the most thrilling and intimate ways to experience a place. A pedestrian can meander beneath verdant tree canopies, stroll alongside vibrant and varied storefronts and porches, greet friends, provide directions to strangers, or simply spend quality time walking a four-legged friend.

Everyone, at some point, is a pedestrian, whether they arrive to a place via car, transit, or bicycle. As we embark on building 21st century cities, towns and villages, the pedestrian (and the pedestrian scale and experience) becomes critical. Understanding how pedestrian scale can be used to rethink and rebalance the largest public space in our communities – the streetspace – will help us to make our future cities, towns and villages more resilient and sustainable for everyone.

Streetspaces, the streets and sidewalks (and the building walls that enclose them) typically represent about 25% to 30% of the land area of our big cities and small towns. As public assets they provide myriad opportunities to reshape and rescale our places to human beings.

Today streetspaces are primarily used as transportation linkages for single occupancy automobiles, complete with scales that prioritize and promote that singular use; however, historically they were places of commerce and gathering - essentially outdoor rooms, or third places - that provided a space for living, working, shopping, learning, recreating, and moving. Pedestrian scaling begins the effort to rebalance these public spaces from today's automobile-dominant, single-use thoroughfares into tomorrow's outdoor rooms.

Resources:

Some of the information contained within this document was derived from the Downtown Grand Rapids Incorporated (DGRI) Streetspace Guidelines. These guidelines have an extensive bibliography and far more information on human scaled placemaking.

Other pertinent documents and books include:

Center for Active Design & City of New York: Active Design, Shaping the Sidewalk Experience.

Cities for People by Jan Gehl and *New City Life* by Jan Gehl (These two books are essential to understand pedestrian scale and how to make places for people. Gehl is the global expert on this topic)

Street Design: The Secret to Great Cities and Towns by Victor Dover and John Massengale (This may be the single best book regarding human scaled street design)

Walkable City, How Downtown Can Save America, One Step at a Time by Jeff Speck

Walkable City Rules, 101 Steps to Making Better Places by Jeff Speck

Streetspaces provide a public platform for people to experience a place with nothing but their own two feet. When they are good, streetspaces are interconnected, interesting, enduring, and inviting. High quality streetspaces entice people to walk and linger within them, and to be physically active without knowing it. They play a critical role in physical activity and health, while supporting community, the local economy, and shared spaces.

What does it mean to be pedestrian scaled?

People walk at about 3 miles per hour and perceive the habitat around them in a complex and multi-sensory way from both a physical and psychological perspective. The understanding of how the human body perceives space is the first step in redesigning and reshaping streetspaces into rich and varied three-dimensional environments at scales that improve human comfort. Pedestrian scale is thinking about how to design and shape the proportion and detail of a place to illicit a positive response from human beings as they intimately observe the space. Critical elements of human scale places include:

1. Narrative of Dimension and Distance

The streetspace, and specifically the building walls that enclose the outdoor room, provide a narrative to the human experience and act as variable edges along the path of human travel, creating complex partial enclosures and potentially lending a certain place-based uniqueness to the experience. Building walls that provide this enhanced pedestrian environment require increased attention to, and complexity within, two critical linear dimensions. These are the vertical dimensions of the building ground floor - which passes immediately beside pedestrians as they are walking - and the horizontal distance, or the distance down the street that is visible and legible to the pedestrian.

Credible and legible horizontal distance is needed to beckon people to continue their journey along the sidewalk. Properly articulated and detailed vertical dimension is needed to both invite people to linger within the streetspace and to continue their journey along the sidewalk.

Vertical Dimension (refer to image 1): The pedestrian's experience is strongly influenced by the vertical height

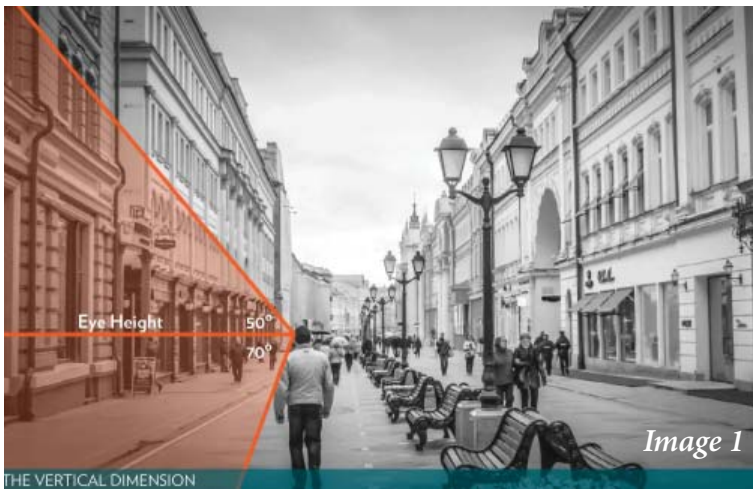
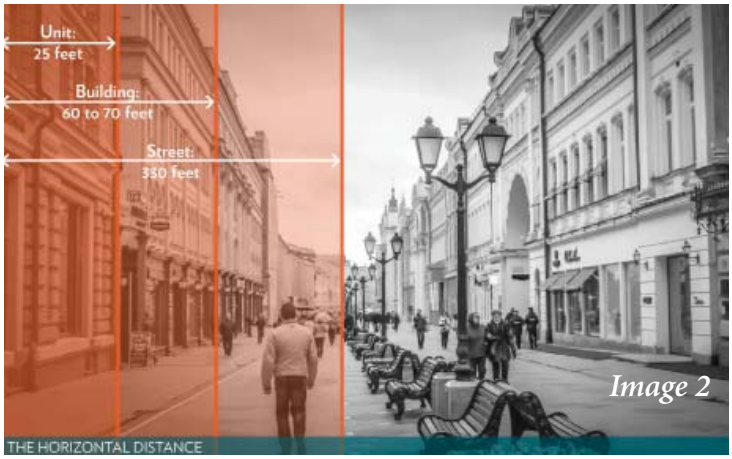


Image 1

of the building wall or frontage. The image indicates the eye height (horizontal line) and the perceived vertical height most intensely experienced by the pedestrian. The human eye typically perceives the space within the angles of 50 - 55 degrees above and 70 - 80 degrees below a direct horizontal line. This is the lower one to two floors of a building. This lower portion of the building wall plane is most successful when it contains a sufficient level of detail and articulation, where it is more closely readable to the human eye while rendering the sidewalk experience interesting and engaging for the walker. This is where it is important to have a high level of detail, higher quality materials, and some degree of variety.



Horizontal Distance contains three sub-scales (refer to image 2):

The Scale of the Unit (or commercial space): The smallest scale of pedestrian experience occurs within the closest 25 feet of the viewer. This is the scale at which the senses are most engaged with the complexities of facade articulation, active entries, materiality, transparency, textures, awnings, signage, and architectural details. This is where the human being will be most engaged, and as the 3 mile per hour movement unfolds, so too should the scale of the unit – a blank wall or parking lot will severely interrupt this experience and result in the possibility of the journey ending prematurely.

The Scale of the Building: 60 to 70 feet is the distance at which the human eye can begin to read facial expressions. It is also the mid-scale of rhythm often demonstrated by vertical distinctions between buildings on the same block. When a single building extends the full length of a block, it can quickly become monotonous and repetitive for the person walking next to it. In cases of long walls, variety should be encouraged using different materials, vertical articulation, vertical window patterns, cornice lines, and other architectural articulations. This mid-scale, when paired with the scale of the street (discussed below), creates a series of organized fixations that the unconscious brain uses to connect a human to the place.

The Scale of the Street: 330 feet is often considered the farthest distance that the human eye can see people or objects in motion. At this scale, people see landmarks in the distance, constructed view corridors, or terminated vistas. This is really the length of the outdoor room and careful street scales can invite people to continue their journey by providing a small glimpse of interest on the horizon.

2. Prospect and Refuge

Your subconscious brain seeks to keep you safe, it does this by continually scanning and processing your environment looking for and maintaining the hard-wired evolutionary desire for secure attachment (or wall hugging). This translates to the desire to want to be close to an edge and to protect your back. Known as prospect and refuge, it is simply the need or desire of people to be closer to an edge and to protect their back – this edge is usually a building wall, but sometimes can be a line of closely spaced street trees that create an illusion of a wall plane, or landscape planters. Physical design elements that greatly influence this feeling of safety and reassurance include:

- Articulated building walls that may have nooks for sitting directly on a ledge, or a space to place a bench up against the wall.
- Interesting walls that offer variety, texture, high-touch materials, and plenty of windows and doors to keep the person engaged as they walk close to the edge of the building.
- Street trees – closely and regularly spaced (about 30 feet on center) and carefully selected for urban conditions, canopy, and size – that help form a secondary edge condition within the street space. Lines of street trees also are great places to install more benches, and even better when the trees are arranged in an allée.

3. The Outdoor Room

While this is really part of the prospect and refuge concept because it provides an architecture of reassurance, its importance requires that it be singled out. A legible and coherent outdoor room starts with proportion of the streetspace through a narrow street and scaled building walls. The best proportion is a 1:1 ratio (1 street unit : 1 wall unit), meaning that if your right-of-way (sidewalks and street) is 66 feet wide, then your building wall height should be close to 66 feet (about 4 to 5 stories). Of course, narrower streets and taller buildings can be paired, but at some point, the streets become relatively inhospitable canyons that receive very little sun and are prone to being wind tunnels, like many in lower Manhattan.

Equally, the right-of way can become wider, and buildings shorter, but in a very small iteration you will end up with an uncontained and poorly defined space that is no longer providing the "architecture of reassurance" and instead makes most people feel as though they are "lost in space". Many of our super car-oriented suburban arterials have a 6:1 or higher ratio – and these are purposely not people scaled places.

This ratio is obviously impacted by overly big setbacks, which break down the enclosure of the space. Retail and commercial buildings are typically constructed right up to the property line to achieve and reinforce the coherent street space. Residential buildings will typically vary in their setback condition, but large setbacks – bigger than 20 to 25 feet for single-family homes will significantly impact the condition and perception of your outdoor room.

A quick fix to alleviate some of the scale issues associated with higher proportions of street to building wall is to plant street trees. Street trees will help to rescale the space, and when properly selected to achieve a robust mature canopy, will also provide your room with a ceiling.

4. A Permeable Edge

Building walls that form the streetspace edge need to have a high level of permeability, manifested in doors and windows. Lots of windows, specifically articulated as a storefront in retail and commercial conditions allow passersby to look in and window shop, while placing the shopkeepers' eyes on the street for increased safety. Doors give the pedestrian opportunities to adjust their journey if so inspired by ducking into a store. Many doors provide many opportunities; one door per block provides little opportunity and is boring to most people. Refer to the two conditions in images 3 and 4, which one is more interesting and enjoyable to someone walking next to it?

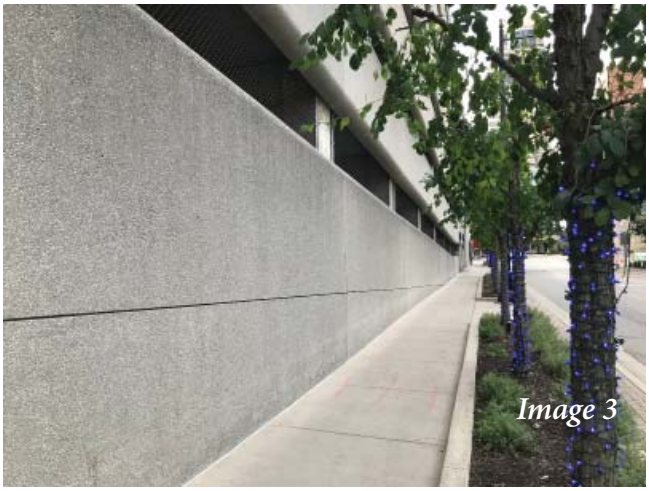


Image 3

Image 4

Residential streets, while a bit different than commercial streets, can also provide a permeable edge. Front porches provide a great way to layer permeability onto a street wall because they set up a series of transitional public-private spaces from sidewalk to house. These transitions allow for people to engage with their neighbors without violating private space thresholds. Porches also provide visual interest because they are semi-transparent, non-solid

extensions of the more solid wall of the home that can oftentimes lend a great deal of variety to the streetspace. The porches in image 5 are in Heritage Hill in Grand Rapids. They frame the street while also providing an opportunity for chance encounters with neighbors.

5. NO Blank Walls

An enemy to the permeable edge is the blank wall. Blank walls do nothing for the streetspace and they do nothing for human scale. While small expanses of periodic blank walls may be inevitable, they should be avoided at all costs in all streetspaces.

Buildings that have large wall spans that are blank or even unprogrammed create psychological "dead space" in the same way that parking lots, vacant lots and vacant buildings do.

Active walls reduce this dead space, leading to pedestrian comfort and visual stimulation, while also increasing the perceptions of safe streetspaces.

6. Materials

High-quality and human-scaled materials are the building blocks of good buildings, great streetspaces, and meaningful human experience in the public realm. The message of quality and durability inherent in long-lasting materials promotes the human perception of timelessness and continuity of place.

Material sizes and proportions should follow historic material scale which was typically smaller and more detailed. This smaller material scale provides visual interest at the 3-mph speed of the pedestrian. Many contemporary materials are intended to be viewed at higher automobile speeds; for instance, the currently in vogue jumbo bricks distort the pedestrian sense of scale and introduce an auto-oriented scale to the streetspace, whereas the standard brick size (3-5/8" x 2-1/4" x 7-5/8") provides a particularly strong connection between human scale and the built environment. The size of a brick is directly related to the ability of a mason to lay it comfortably by hand.

Human-scaled details also provide a finer-grain building wall that adds to the complexity of the streetspace and breaks down the rhythm of the overall horizontal distance, making street and block lengths appear shorter and thus more inviting to continue the journey. We perceive buildings that have been assembled with human-scaled materials as the result of tangible human activities rather than as synthetic abstractions.

Materials also contribute to the perception of a building's overall scale and texture. Individual elements of a known size, such as the brick example above, allow the observer to understand the total size and scale of the structure.

Materials make a difference and their selection should be carefully considered though the lens of size, scale, durability, and human perception.

7. Simplicity of Material

Do not be confused by the notion that more materials on a single building will make the architecture better or lead to a better place. There are few examples of buildings worldwide that have 5 or more materials jumbled together that contribute to making a good human scale place.

Limit the number of materials and colors on the primary street-facing facade and avoid mixing several materials in a way that results in an overly busy design. Simple material palettes with only slight variations provide a more coherent building design while maintaining a sense of scale. The use of several different materials and colors is not an effective way to provide building articulation. This is one instance where "less is more" is advice to be followed.

How to begin implementing pedestrian scale?

In order to build people spaces that are safe, accessible, connected, sustainable, interesting and

memorable we must decide to put people first, and that means designing and planning for the pedestrian. This can effectively be accomplished by reshaping the streetspace (the walls, floor and ceiling of the outdoor room) with policy and design.

Where you start depends on what the context of your community is and what stage of development intensity and evolution your community has achieved. It is also important to remember that the best progress is incremental. Do not sweat it if you can only do small interventions, and never let the perfect get in the way of the good.

The following suggestions are grouped as Zoning Improvements, Policy Changes, Design Guidelines, and Tactical Interventions. They are not mutually exclusive and oftentimes work together to build pedestrian scale.

Zoning Improvements:

In commercial areas require or incentivize small ground floor units with many doors. By providing approximately one door every 25 to 30 feet you increase activity and interest at the sidewalk, provide more opportunity for pedestrians to enter a building, and create less potential for blank or non-active street walls. This requirement also potentially encourages smaller retail units which help promote local start-up businesses and provide easier points of entry into commercial ownership by historically disenfranchised people. Note that locked doors, emergency egress only doors and stairwell doors do not typically support the intent of this recommendation.

Require transparency. Transparency is critical to achieve active walls that promote visually engaging experiences, vibrant and safe streetspaces, and commerce at the sidewalk. Transparency is measured in two ways:

1. The amount of wall (between 2 feet and 8 feet above the sidewalk) that contains clear glass and is not blank. For storefronts this should be 60% minimum of the overall front wall. For residential buildings it should range between 15% (for single family detached homes) and up to 60% (for live/work buildings).
2. The quality and performance of the clear glass. Clear glass should have a minimum 70% Visible Light Transmission (VLT). This is the percentage of visible light that is transmitted through the glass. The higher the percentage, the clearer and more transparent the glass is. Clear glass should have a maximum 12% Visible Light Reflectance (VLR). This is the percentage of visible light that is reflected by the glass surface. The lower the percentage, the clearer and more transparent the glass is.

Allow for encroachment into the public realm by awnings and blade signs. Awnings provide façade relief and variety, introduce visual interest through color and texture, and provide a place for pedestrians to duck out of the weather. Blade signs provide similar variety, visual interest and color to the streetspace as well as providing wayfinding for people on foot. Both elements oftentimes need to project into the public space to be effective. Note that the scale and materiality of these elements should be carefully calibrated to the viewpoint of the pedestrian moving at 3mph and not the car moving at 30, 40 or 50 mph.

A **blade sign** is a type of projecting sign mounted on a building facade or storefront pole or attached to a surface perpendicular to the normal flow of traffic. These signs are one of the most effective way of attracting foot traffic into your establishment.

Create a Form-Based Code (FBC). These first three items can be integrated into a FBC which can also address building frontages (like porches, stoops, and storefronts), build-to-lines, parking, and active use locations on a site, building massing, and sometimes even street widths and streetspace composition. Form-Based-Codes regulate the form of the built environment and typically encourage a more pedestrian scale of development.

Policy Changes:

Have your town transportation department use NACTO in lieu of AASHTO guidelines. The American Association of State Highway and Transportation Officials (AASHTO) provides design guidelines that, as the name suggests, calibrate primarily to highway design. AASHTO guidelines prioritize the efficient movement of traffic, whereas guidelines created by the National Association of City Transportation Officials (NACTO) typically

offer more comprehensive and flexible guidance to build pedestrian, bicycle, transit and automobile streets – streets that are multi-use and shared. NACTO guidelines are typically more user friendly than those of AASHTO.

Rebalance your streets. Consider all users of the streetspace and consider making incremental changes to the streets to provide more meaningful space for all modes. This rebalancing can include converting the extra space that has been allocated for cars to café seating, parklets, bike lanes, shared mobility lanes, shared streets, or landscape planters and bioswales. Street conditions that are opportunities to rebalance include 4-lane streets, street with too-wide travel lanes, street with extraneous right or center/left turn lanes, and (in some cases) on-street parking lanes (whose space may be reallocated to more multi-purpose uses).

Ask the right questions. In lieu of asking only about average daily car trips, delays for motorists, and have you performed a traffic impact study - also ask about crash data, who is the most vulnerable street user, and have you performed a pedestrian and bike impact study. Other questions not related to street safety should also be considered, for instance, instead of asking about preventing loitering, perhaps ask where can we add seating that is comfortable and inviting?

Plant and maintain street trees. Healthy street trees are a critical and defining component to our streetspaces. Whether walking, biking, or driving,

ELEMENTS OF A STOREFRONT

A **Bulkhead:** A short wall that is typically between 18 to 24 inches above the adjacent sidewalk, to maximize the amount of display window, while still giving the glass some buffer from the sidewalk. Bulkheads that are too high will limit the amount of display window, which will limit transparency, permeability and opportunities for the merchant to display goods. Another important reason to have a bulkhead in our climate is to ensure that snow does not pile up against the glass of the window.

B **Display window:** Large panes of transparent glass that sit on the bulkhead, typically between 7 and 10 feet tall. The display window is the essential component of the storefront and should provide transparent (clear) glass for at least 60 percent of the building frontage - this means that there is the possibility of vertical breaks between glass as long as they are small. Display windows should always be directly accessible and visual from the adjacent sidewalk.

Image 6a

street trees can set a temperament for the community environment. Tree lined streets can establish a calming sense of enclosure for those on our sidewalks, influence traffic speeds to increase safety, or provide a unique character for a downtown shopping district. Street trees are proven to provide an array of environmental, economic, and social benefits to a city, town or village. An important consideration for

C **Storefront entrance:** The main entrance to the business from the sidewalk. In almost all cases this entrance is recessed and flanked by angled display windows that transition from the front building wall to the recessed entry. The importance of having a recessed entry is to allow for protection from the weather, to offer a transition between the sidewalk and the inside of the business, and so that the door does not swing into the sidewalk. The depth of this entry is typically between 3 and 8 feet from the front of the building and should be proportional to the overall building composition.

D **Transom:** The horizontal band of windows located above the display window, typically 24 to 36 inches high. These windows help to provide a human scale to the storefront while also providing additional light into the building (especially for inside spaces that are long and narrow). Transoms are not always present - when they are not provided, the display window should be taller.

E **Beam:** Horizontal expression band that is sometimes capped with a decorative cornice. This band effectively separates the storefront from the upper stories of the building and provides an excellent place for business signs and exterior lighting. The beam is typically 24 to 40 inches high and should be proportional to the building mass and scale. This band is also sometimes part of the 3-part building design that distinguishes the base from the body of the building *(refer to the 3-part building composition)*.

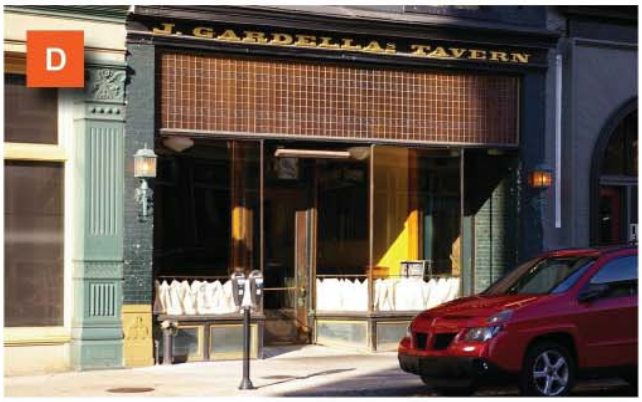


Image 6b

selecting street trees is to use trees which will become large over time. Using large trees optimizes the urban tree canopy and provides an estimated 5 times the amount of associated benefits compared to planting many small trees. Large trees also have the greatest potential to provide shade in the public right-of-way by forming a complete canopy over the street.

Design Guidelines:

Consider using design guidelines that help promote basic pedestrian scale interventions, specifically to the building walls that define the streetspace. These should not be zoning requirements nor should they promote building styles; rather they should provide guidance to establish visually coherent, human scaled buildings that are consistent with their context. These design guidelines may include:

Creating a 3-part building with a defined base + body + top. Buildings that incorporate a "3-part" design establish a scale and mass that is consistent with city form and human scaled outdoor rooms. Buildings with a coherent base, body and top reinforce the sense of scale at the street level, provide visual cues about the building's relationship to its context, and provide the walls of a visually interesting streetspace.

Creating vertical patterns. This articulation, particularly at the street level, enhances the pedestrian experience by providing something interesting to look at through the variation of materials, forms, and surfaces along the building frontage. This variation is important to encourage pedestrians to continue their journey within a streetspace.

Materials. As referenced above, offer guidance on materials and number of materials on a building. Perhaps find buildings in your town that exemplify the character and scale that you are seeking and use them as guidance.

Storefronts. Use your design guidelines to encourage proper storefronts in your business districts. The storefront is a critical frontage to help build pedestrian scale. Images 6a and 6b on the preceding pages depicts storefront guidelines created by the Grand Rapids Downtown Development Authority.

Tactical Interventions:

Test your proposed solutions in a lighter, quicker, cheaper way by deploying them through tactical interventions. These interventions are often practical for rebalancing the street – you can deploy temporary bike lanes, traffic calming measures, or even wider sidewalks and narrower traffic lanes through temporary installations. These installations can be something as simple as paint and traffic cones, or as elaborate as parklets and concrete barriers. During the Covid-19 shutdown and subsequent early recovery period, many cities and towns rebalanced (or in some cases completely shut-down) their streets to allow for more pedestrian or bike space or to increase restaurant seating. Image 7 shows the partial closure of Bridge Street in Grand Rapids, Michigan to provide more people space in the form of outdoor seating.

Image 7

This tear sheet was developed by the Michigan Association of Planning (MAP) for the Michigan Economic Development Corporation (MEDC). The Michigan Association of Planning is a 501 c 3 organization, dedicated to promoting sound community planning that benefits the residents of Michigan. MAP was established in 1945 to achieve a desired quality of life through comprehensive community planning that includes opportunities for a variety of lifestyles and housing, employment, commercial activities, and cultural and recreational amenities.